GOVERNMENT OF SINDH

Sindh Mass Transit Authority

Request For Proposals
Works (Design and Build)

RFP No.: PK-SMTA-334960-CW-RFP
Loan No.: IBRD-89950

Procurement of Package - 4: NEW JAM SADIQ BRIDGE (Yellow Corridor Segment 3)

KARACHI MOBILITY PROJECT

Volume 4

01- Roads
02- Bridge
04- Utilities

Project Director (Karachi Mobility Project)
Bus Rapid Transit (BRT) "Yellow Line"
Sindh Mass Transit Authority, Karachi-Pakistan

Issued on: March 2023

Request For Proposal Documents
Works (Design and Build)

Main Contents

VOLUME (1): **Instructions to Proposers (ITP) &**
Proposal Data Sheet (PDS), Proposal Forms / Schedules,
Conditions of Contract, Contract Forms / Schedules

Part 1 - Request for Proposal Procedures
Section I Instructions to Proposers (ITP)
Section II Proposal Data Sheet (PDS)
Section III Evaluation and Qualification Criteria
Section IV Proposal Forms
Section V Eligible Countries
Section VI Fraud and Corruption

Part 2 - Employer's Requirements
Section VII Employer's Requirements

Part 3 - Conditions of Contract and Contract Forms
Section VIII General Conditions (GC)
Section IX Particular Conditions (PC)
Section X Contract Forms

VOLUME (2):

Part (A) Employer's Requirements
1) Introduction
2) General Overview of the Project
3) Design Intent
4) Design Responsibility
5) Interface Management
6) Design Stages and Deliverables
7) Basis of Design

Part (B) Specifications (1 of 2)
Division 01 - General Requirements

Part (B) Specifications (2 of 2)
Division 02 - Site Construction
Division 03 - Concrete
Division 07 - Thermal and Moisture Protection
Division 26 - Electrical
Division 31 - Earthwork
Division 32 - Exterior Improvements
Division 33 - Utilities
Division 34 - Transportation

VOLUME (3): Schedule of Priced Activities

Basis of Pricing

Pricing Preambles
1 Design & Special Works
2 Bridge Works
3 Roadworks
4 Electrical Works
5 Utilities

Pricing Schedules

Summary
1 General and Particular Conditions of Contract
2 General Requirements
3 Design & Special Works
4 Bridge Works
5 Roadworks
6 Electrical Works
7 Utilities

VOLUME (4): Drawings

01- Roads
02- Bridge
04- Utilities

VOLUME (5): Technical Documents "For Information":

5A - Geotechnical Investigation
5B - Hydrology and Hydraulics Study Report
5C - Environmental and Social Management Plan
5D - Structure Condition Survey – Existing Jam Sadiq Bridge Assessment & Rehabilitation Report

No	Drawing Number	Drawing Name
ROADS DRAWINGS		
1	P21161/4309-04-CD-TR-0001-REV0	LIST OF DRAWINGS
2	P21161/4309-04-CD-TR-0002-REV0	GENERAL NOTES, SYMBOLS & ABBREVIATIONS
3	P21161/4309-04-CD-TR-0003-REV0	GENERAL LOCATION PLAN
4	P21161/4309-04-CD-TR-0004-REV0	GENERAL LAYOUT PLAN
5	P21161/4309-04-CD-TR-1001-REV0	TOPOGRAPHIC SURVEY PLAN
6	P21161/4309-04-CD-TR-1101-REV0	ENLARGED ROAD LAYOUT PLAN
7	P21161/4309-04-CD-TR-1102-REV0	ROADS PLAN/PROFILE LHS ALIGNMENT
8	P21161/4309-04-CD-TR-1103-REV0	ROADS PLAN/PROFILE RHS ALIGNMENT
9	P21161/4309-04-CD-TR-3001-REV0	TYPICAL CROSS SECTIONS
10	P21161/4309-04-CD-TR-3002-REV0	ROADS TYPICAL DETAILS
11	P21161/4309-04-CD-TR-6001-REV0	ALIGNMENTS SETTING OUT DATA
12	P21161/4309-04-CD-TR-7001-REV0	SIGNING AND ROAD MARKING LAYOUT
NEW BRIDGE DRAWINGS		
12	P21161/4309-04-CD-BR-0001-REV0	GENERAL NOTES
13	P21161/4309-04-CD-BR-1001-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 1 OF 9)
14	P21161/4309-04-CD-BR-2001-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 2 OF 9)
15	P21161/4309-04-CD-BR-2002-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 3 OF 9)
16	P21161/4309-04-CD-BR-3001-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 4 OF 9)
17	P21161/4309-04-CD-BR-3002-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 5 OF 9)
18	P21161/4309-04-CD-BR-3003-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 6 OF 9)
19	P21161/4309-04-CD-BR-3004-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 7 OF 9)
20	P21161/4309-04-CD-BR-3005-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 8 OF 9)
21	P21161/4309-04-CD-BR-3006-REV0	GENERAL ARRANGEMENT AND DETAILS (SHEET 9 OF 9)
UTILITIES DRAWINGS		
22	P21161/4309-04-CD-WE-UD-1100-REV0	KEY PLAN FOR EXISTING UTILITIES
23	P21161/4309-04-CD-WE-UD-1101-REV0	EXISTING UTILITIES LAYOUT PLAN SHEET (1 OF 4)
24	P21161/4309-04-CD-WE-UD-1102-REV0	EXISTING UTILITIES LAYOUT PLAN SHEET (2 OF 4)
25	P21161/4309-04-CD-WE-UD-1103-REV0	EXISTING UTILITIES LAYOUT PLAN SHEET (3 OF 4)
26	P21161/4309-04-CD-WE-UD-1104-REV0	EXISTING UTILITIES LAYOUT PLAN SHEET (4 OF 4)
27	P21161/4309-04-CD-WE-UD-3001-REV0	CROSS SECTION-1 FOR EXISTING UTILITIES
28	P21161/4309-04-CD-WE-UD-3002-REV0	CROSS SECTION-2 FOR EXISTING UTILITIES
29	P21161/4309-04-CD-WE-UD-3003-REV0	CROSS SECTION-3 FOR EXISTING UTILITIES

FOR TENDER
December 2022

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TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

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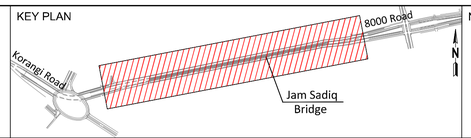
KEY PLAN



NOTES & LEGEND

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
LIST OF DRAWINGS

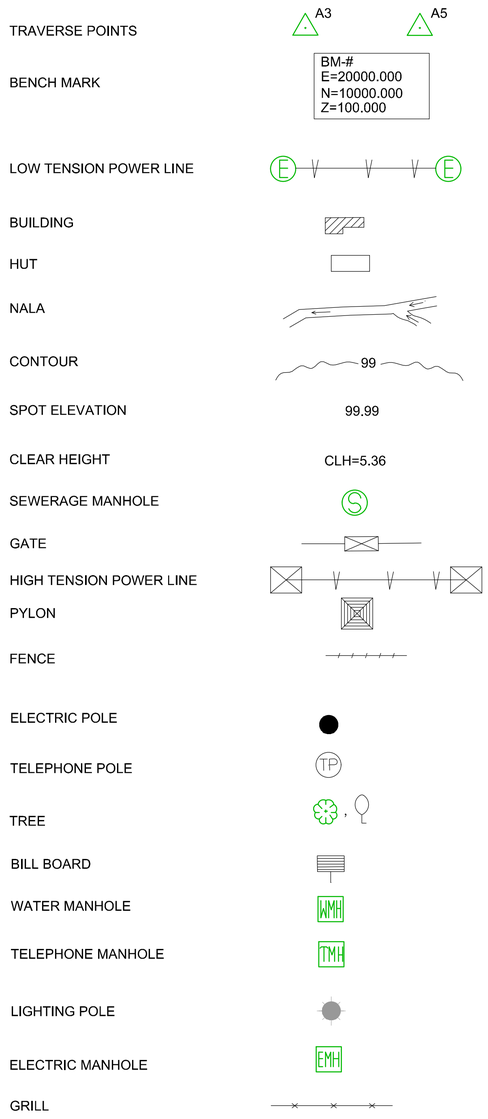
SCALE
N.T.S.
@A1

DATE	DRAWING NUMBER	REVISION
12/12/2022	P21161-4309-04-CD-TR-0001	0

GENERAL NOTES:-

1. ALL DIMENSIONS AND UNITS ARE IN SI UNIT SYSTEM OF MEASUREMENT EXCEPT WHERE OTHERWISE INDICATED.
2. GRID COORDINATES ARE IN METERS AND WITH REFERENCE TO UTM 42.
3. ELEVATIONS AND TOPOGRAPHY SHOWN ON THE DRAWINGS REPRESENT CONDITIONS AT THE TIME OF THE SURVEY CARRIED OUT IN OCTOBER 2021.
4. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXISTING FEATURES AND ELEVATIONS SHOWN IN DRAWINGS JOINTLY WITH THE ENGINEER.
5. ALL PROFILE DRAWINGS SHALL BE READ IN CONJUNCTION WITH RELEVANT PLAN AND CROSS-SECTION DRAWINGS.
6. ARROWS SHOWN ON PLANS INDICATE DIRECTION OF TRAFFIC ONLY, THEY DO NOT REPRESENT PAVEMENT MARKING.
7. THE CONTRACTOR SHALL ENSURE THAT ALL THE SUITABLE MATERIAL RECOVERED AND OBTAINED DURING EXISTING ROADWAY EXCAVATION SHALL BE USED IN NEW CONSTRUCTION IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
8. THE CONTRACTOR SHOULD AVOID UNNECESSARY CUTTING / REMOVAL OF TREES.

SYMBOLS



ABBREVIATIONS

ALIGN	ALIGNMENT	LP	LIGHT POLE
B.M	BENCH MARK	mm	MILLIMETERE
BOP	BEGINNING OF PROJECT	M/m	METER
BLD	BUILDING	M.H	MAN HOLE
BRG	BRIDGE	N	NORTHING, NORTH
BW	BOUNDARY WALL	NO	NUMBER
CHN	CHAINAGE	N.T.S	NOT TO SCALE
CP	CONTROL POINT	NIC	NOT IN CONTRACT
CL	CENTER LINE	P	OFFSET OF T. LINE
CURVE LEN.	VERTICAL CURVE LENGTH	PC	POINT OF HORIZONTAL CURVE
D	DEPTH	PC	PILE CAP
DEG	DEGREE	PGL	PROFILE GRADE LINE
DIA	DIAMETER	PI	POINT OF HORIZONTAL INTERSECTION
DIM	DIMENSION	PR	POINT OF ROTATION
DR	DRAIN	PT	POINT OF TANGENCY
DWG	DRAWING	R	RADIUS OF HORIZONTAL CURVE
E	EASTING, EAST, EXTERNAL DISTANCE	RE	ROAD EDGE
E	EXTERNAL ORDINATE	RL	ROAD LEVEL
EL/ELEV.	ELEVATION	STA,STN	STATION
EOP	END OF PROJECT	R.O.W	RIGHT OF WAY
EP	ELECTRIC POLE	S	SOUTH
F	FOOTPATH	SL	SURFACE LEVEL
F.R.L	FINISHED ROAD LEVEL	T	TANGENT LENGTH OF HORIZONTAL CURVE
H/HOR.	HORIZONTAL	T.P	TELEPHONE POLE
K	RATIO OF CURVE LENGTH TO ABSOLUTE VALUE OF CHANGE IN GRADES	UTM	UNIVERSAL TRANSVERSE MARCATOR
KM	KILOMETER	V	VERTICAL
L	LENGTH OF HORIZONTAL CURVE/SPIRAL	VPC	VERTICAL POINT OF CURVATURE
LP	LOW POINT	VPI	VERTICAL POINT OF INTERSECTION
		VPT	VERTICAL POINT OF TENGANCY
		W	WEST
		W.C	WATER COURSE
		W.TANK	WATER TANK

FOR TENDER
December 2022

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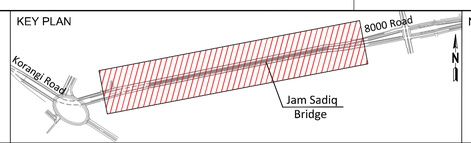
KEY PLAN


NOTES & LEGEND

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0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
GENERAL NOTES
SYMBOLS & ABBREVIATIONS

SCALE
N.T.S.
@A1

DATE	DRAWING NUMBER	REVISION
12/12/2022	P21161-4309-04-CD-TR-0002	0

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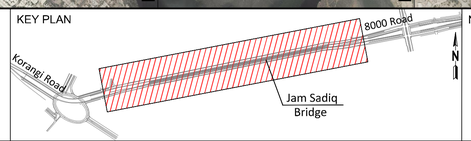
KEY PLAN



NOTES & LEGEND
YELLOW BRT LINE

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

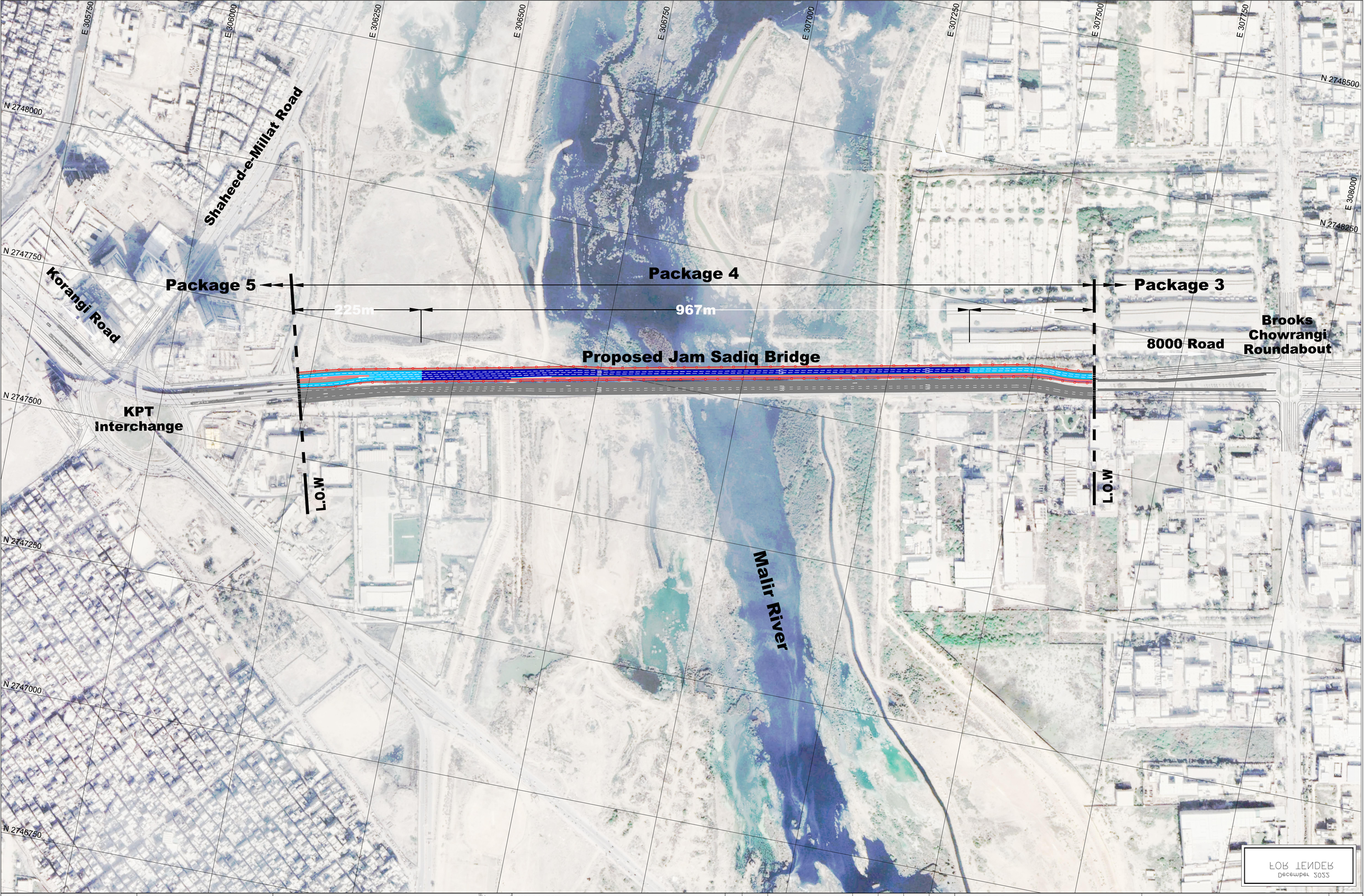
DRAWING TITLE
GENERAL LOCATION PLAN

SCALE
1:25000 @A1

DATE
12/12/2022

DRAWING NUMBER
P21161-4309-04-CD-TR-0003

REVISION
0



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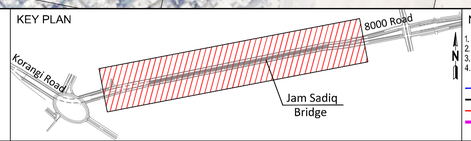


NOTES & LEGEND

1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.
2. HORIZONTAL DATUM IS REFERENCED TO WGS-84 (UTM), ZONE-42N.
3. FOR TYPICAL ROAD CROSS SECTION, REFER DWG. NO; P21161/4309-04-CD-TR-3001
4. RECONSTRUCTION OF EXISTING JAM SADIQ BRIDGE - PACKAGE 8 - NOT UNDER THIS CONTRACT

- DROP CURB
- UPSTAND CURB
- NEW PARAPET
- VISUAL BARRIER
- NEW BRIDGE
- BRIDGE APPROACHES
- BRT DEDICATED LANE
- SIDEWALK
- PACKAGE 8

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
GENERAL LAYOUT PLAN

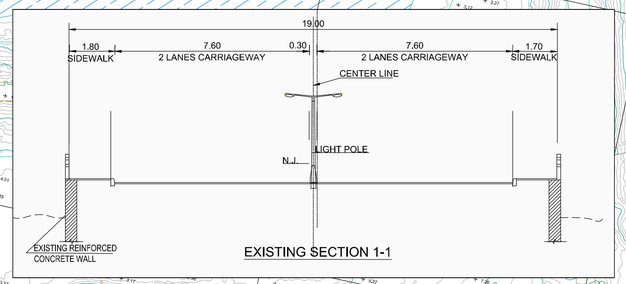
SCALE
1:3000
@A1

DATE
12/12/2022

DRAWING NUMBER
P21161-4309-04-CD-TR-0004

REVISION
0

Point Name	Easting (m)	Northing (m)	Elevation (m)
CP-01	306259.796	2747635.000	5.374
CP-02	306568.860	2747691.124	13.298
CP-03	307015.794	2747783.910	13.477
CP-04	307234.982	2747861.336	9.675
CP-05	307549.558	2747886.536	6.280



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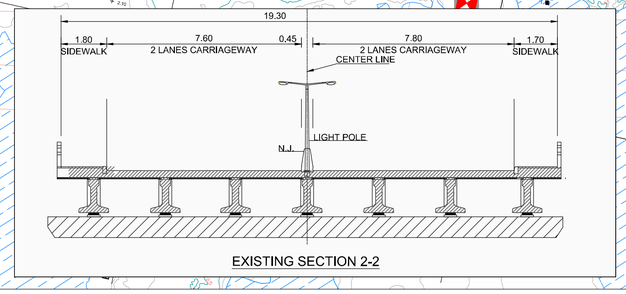

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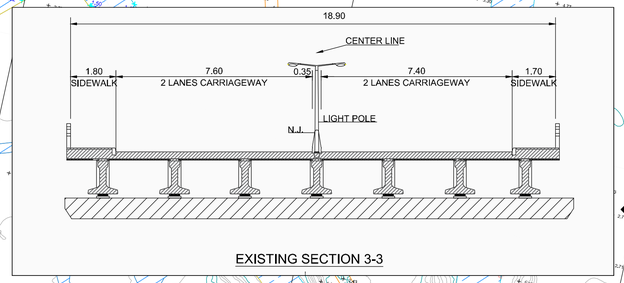

EXISTING SECTION 3-3

FOR TENDER
December 2022

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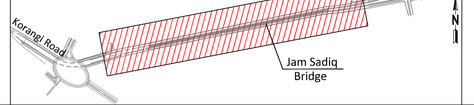
KEY PLAN


NOTES & LEGEND
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.
2. COORDINATE SYSTEM: WGS 1984 UTM ZONE 42N
PROJECTION: TRANSVERSE MERCATOR DATUM: WGS 1984

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
TOPOGRAPHIC SURVEY PLAN

SCALE
1:1000@A1
@A1

DATE
12/12/2022

DRAWING NUMBER
P21161-4309-04-CD-TR-1001

REVISION
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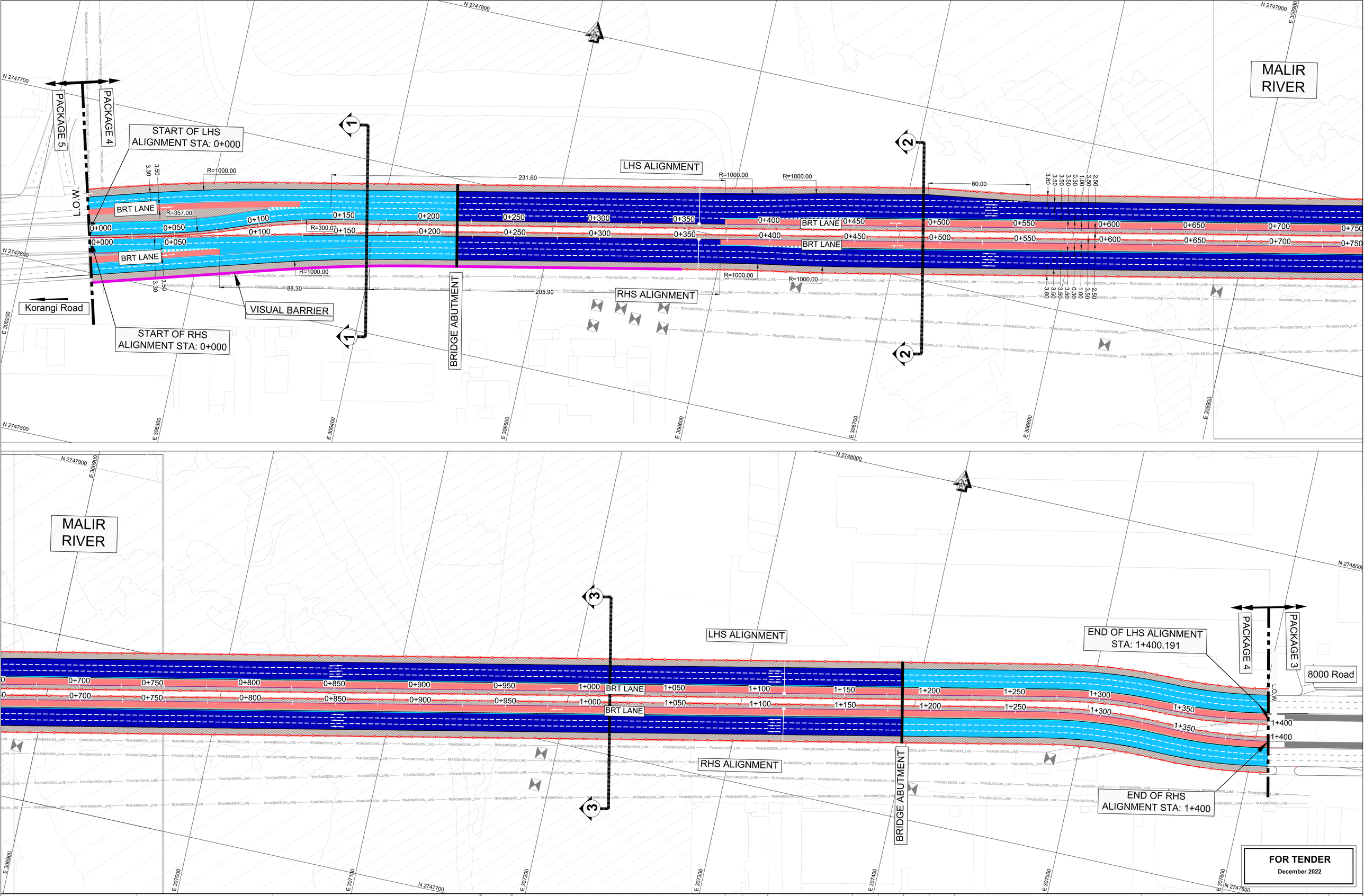

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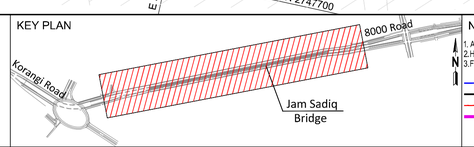


NOTES & LEGEND
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.
2. HORIZONTAL DATUM IS REFERENCED TO WGS 84 (UTM) ZONE 42N.
3. FOR TYPICAL ROAD CROSS SECTION, REFER DWG. NO. P21161/4309-04-CD-TR-3001

DROP CURB
UPSTAND CURB
NEW PARAPET
VISUAL BARRIER
NEW BRIDGE
BRIDGE APPROACHES
BRT DEDICATED LANE
SIDEWALK

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

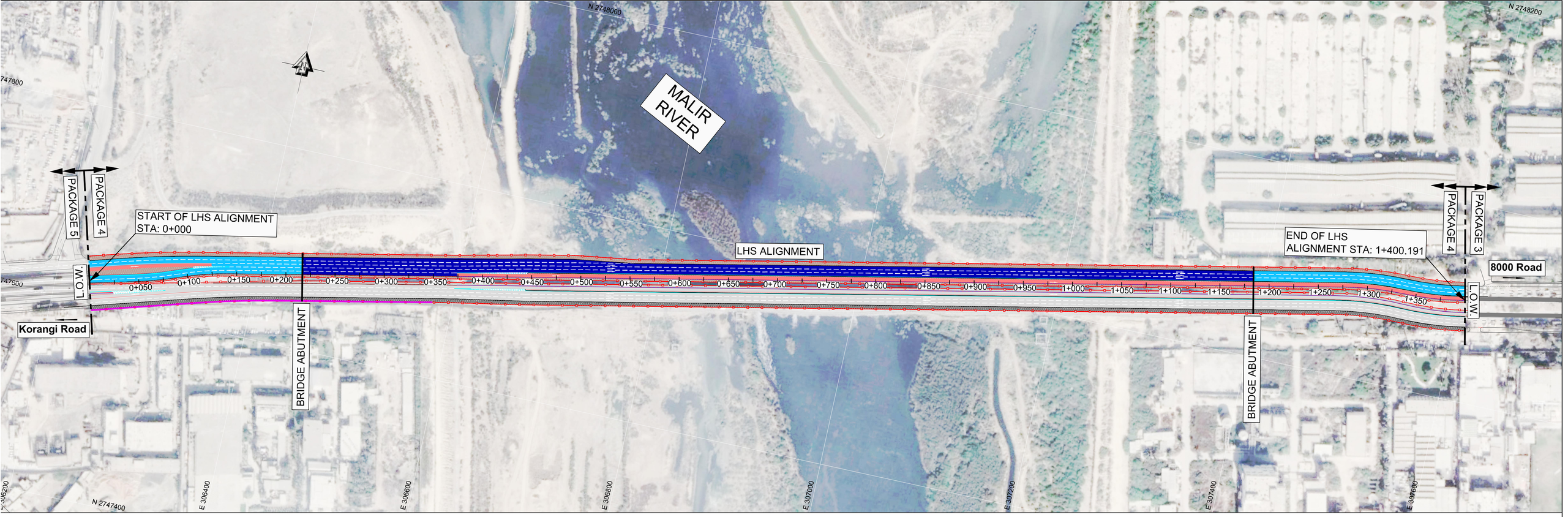
DRAWING TITLE
ENLARGED ROAD LAYOUT PLAN

SCALE
1:1000 @A1

DATE
12/12/2022

DRAWING NUMBER
P21161-4309-04-CD-TR-1101

REVISION
0


MALIR RIVER
N 2748000
N 2748200
N 2747400
E 306200
E 306400
E 306600
E 306800
E 307000
E 307200
E 307400
E 307600
PACKAGE 5
PACKAGE 4
PACKAGE 4
PACKAGE 3
START OF LHS ALIGNMENT
STA: 0+000
LHS ALIGNMENT
END OF LHS
ALIGNMENT STA: 1+400.191
L.O.W.
L.O.W.
Korangi Road
8000 Road
BRIDGE ABUTMENT
BRIDGE ABUTMENT
0+050
0+100
0+150
0+200
0+250
0+300
0+350
0+400
0+450
0+500
0+550
0+600
0+650
0+700
0+750
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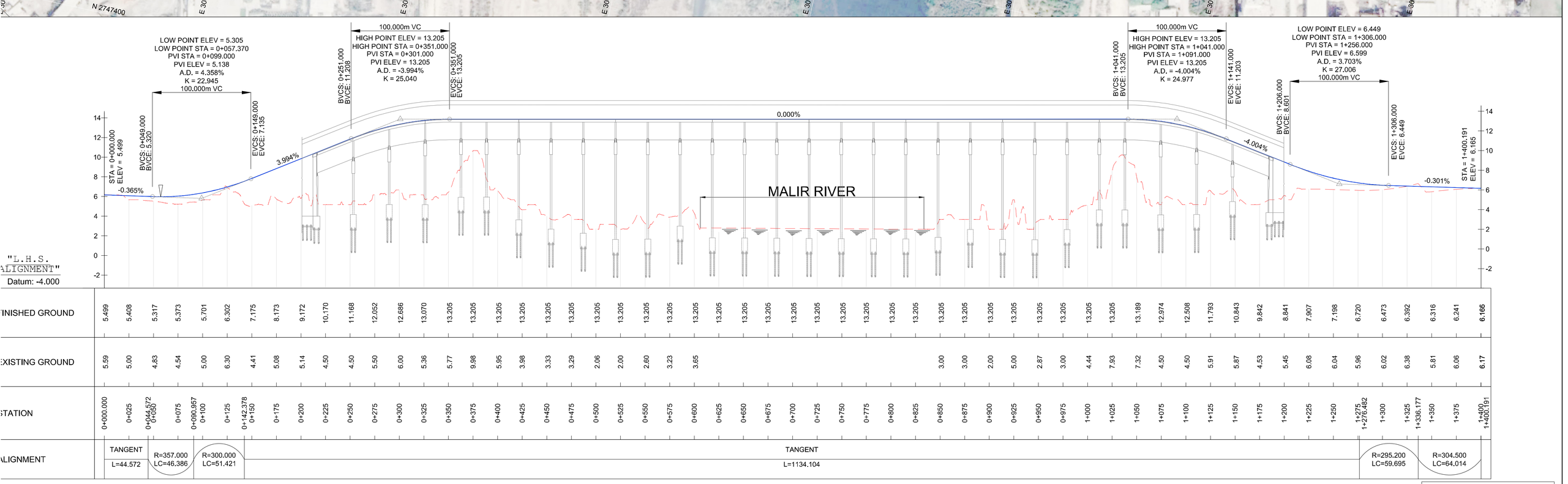
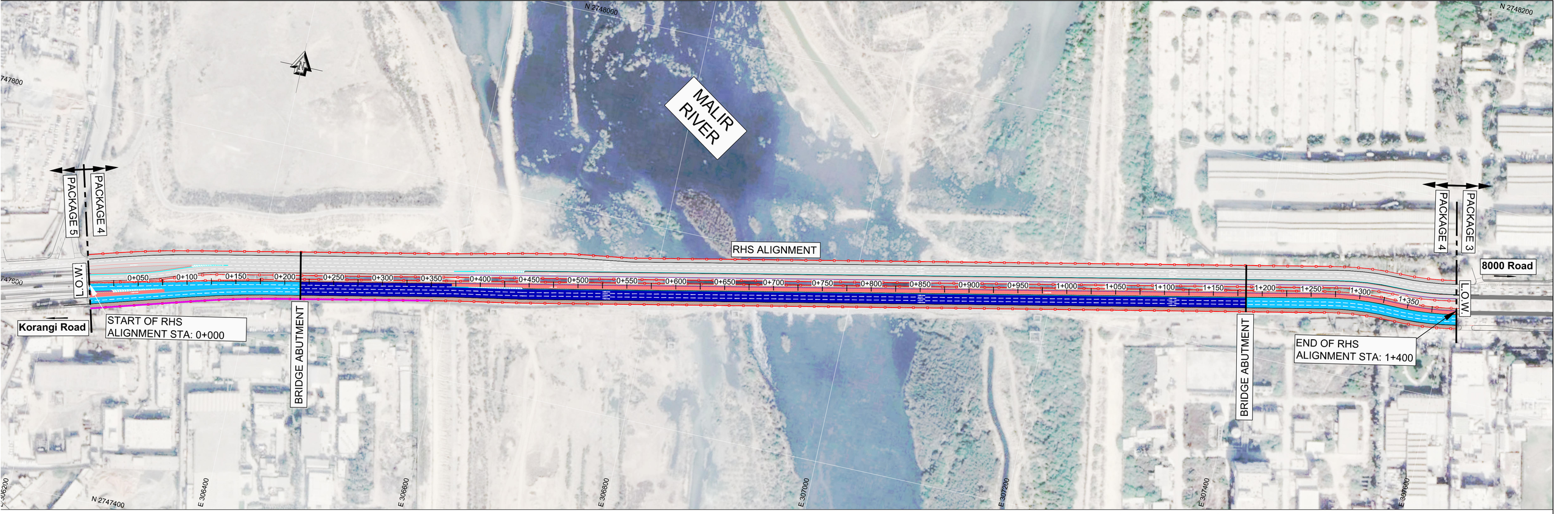
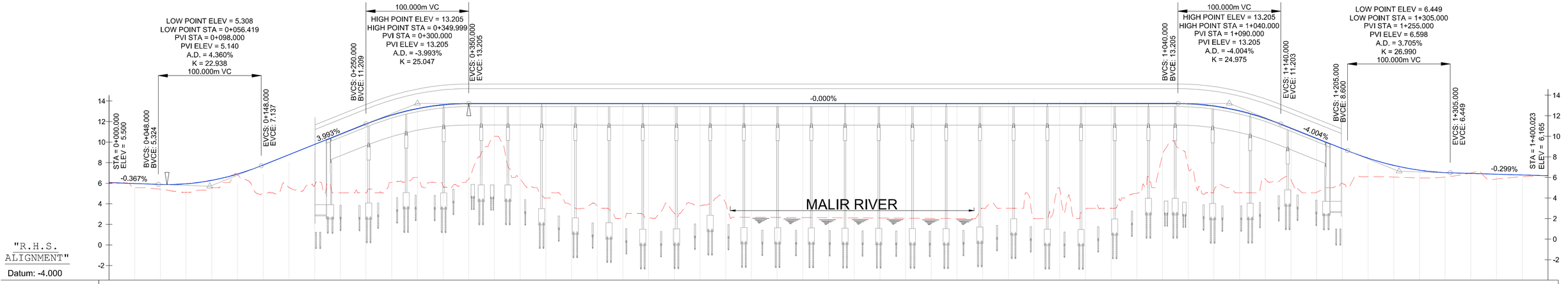
1+250
1+300
1+350

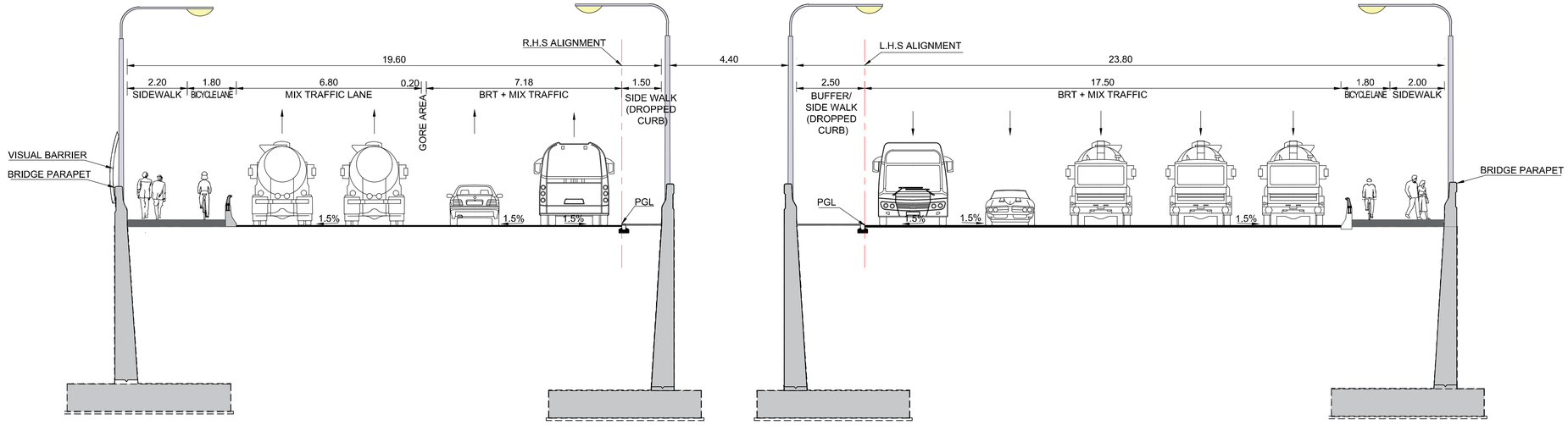

LOW POINT ELEV = 5.305
LOW POINT STA = 0+057.370
PVI STA = 0+099.000
PVI ELEV = 5.138
A.D. = 4.358%
K = 22.945
100.000m VC
100.000m VC
HIGH POINT ELEV = 13.205
HIGH POINT STA = 0+351.000
PVI STA = 0+301.000
PVI ELEV = 13.205
A.D. = -3.994%
K = 25.040
100.000m VC
HIGH POINT ELEV = 13.205
HIGH POINT STA = 1+041.000
PVI STA = 1+091.000
PVI ELEV = 13.205
A.D. = -4.004%
K = 24.977
LOW POINT ELEV = 6.449
LOW POINT STA = 1+306.000
PVI STA = 1+256.000
PVI ELEV = 6.599
A.D. = 3.703%
K = 27.006
100.000m VC
STA = 0+000.000
ELEV = 5.499
BVCS: 0+049.000
BVCE: 5.320
EVCS: 0+149.000
EVCE: 7.135
BVCS: 0+251.000
BVCE: 11.208
EVCS: 0+351.000
EVCE: 13.205
BVCS: 1+041.000
BVCE: 13.205
EVCS: 1+141.000
EVCE: 11.203
BVCS: 1+206.000
BVCE: 8.601
EVCS: 1+306.000
EVCE: 6.449
STA = 1+400.191
ELEV = 6.165
-0.365%
3.994%
0.000%
-4.004%
-0.301%
MALIR RIVER
"L.H.S. ALIGNMENT"
Datum: -4.000

| | | |

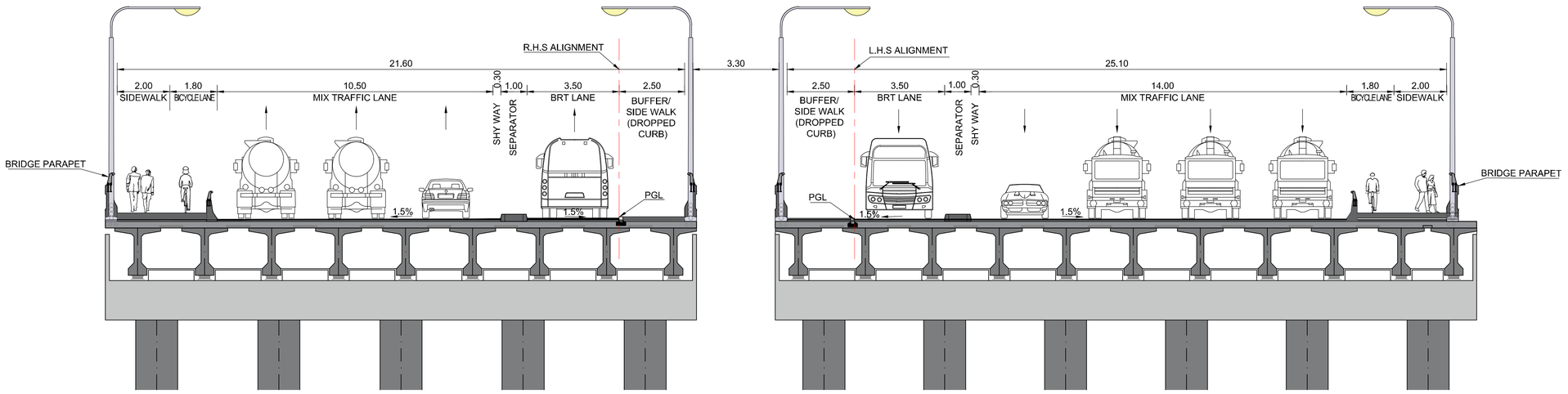

N 2748000
N 2748200
MALIR RIVER
PACKAGE 5
PACKAGE 4
PACKAGE 4
PACKAGE 3
RHS ALIGNMENT
L.O.W.
L.O.W.
8000 Road
Korangi Road
START OF RHS ALIGNMENT STA: 0+000
BRIDGE ABUTMENT
BRIDGE ABUTMENT
END OF RHS ALIGNMENT STA: 1+400
0+050
0+100
0+150
0+200
0+250
0+300
0+350
0+400
0+450
0+500
0+550
0+600
0+650
0+700
0+750
0+800
0+850
0+900
0+950
1+000
1+050
1+100
1+150
1+200
1+250
1+300
1+350
N 2747400
E 306400
E 306600
E 306800
E 307000
E 307200
E 307400
E 307600


LOW POINT ELEV = 5.308
LOW POINT STA = 0+056.419
PVI STA = 0+098.000
PVI ELEV = 5.140
A.D. = 4.360%
K = 22.938
100.000m VC
STA = 0+000.000
ELEV = 5.500
BVCS: 0+048.000
BVCE: 5.324
EVCS: 0+148.000
EVCE: 7.137
-0.367%
3.993%
100.000m VC
HIGH POINT ELEV = 13.205
HIGH POINT STA = 0+349.999
PVI STA = 0+300.000
PVI ELEV = 13.205
A.D. = -3.993%
K = 25.047
BVCS: 0+250.000
BVCE: 11.209
EVCS: 0+350.000
EVCE: 13.205
-0.000%
MALIR RIVER
100.000m VC
HIGH POINT ELEV = 13.205
HIGH POINT STA = 1+040.000
PVI STA = 1+090.000
PVI ELEV = 13.205
A.D. = -4.004%
K = 24.975
BVCS: 1+040.000
BVCE: 13.205
EVCS: 1+140.000
EVCE: 11.203
-4.004%
LOW POINT ELEV = 6.449
LOW POINT STA = 1+305.000
PVI STA = 1+255.000
PVI ELEV = 6.598
A.D. = 3.705%
K = 26.990
100.000m VC
BVCS: 1+205.000
BVCE: 8.600
EVCS: 1+305.000
EVCE: 6.449
-0.299%
STA = 1+400.023
ELEV = 6.165
"R.H.S. ALIGNMENT"
Datum: -4.000

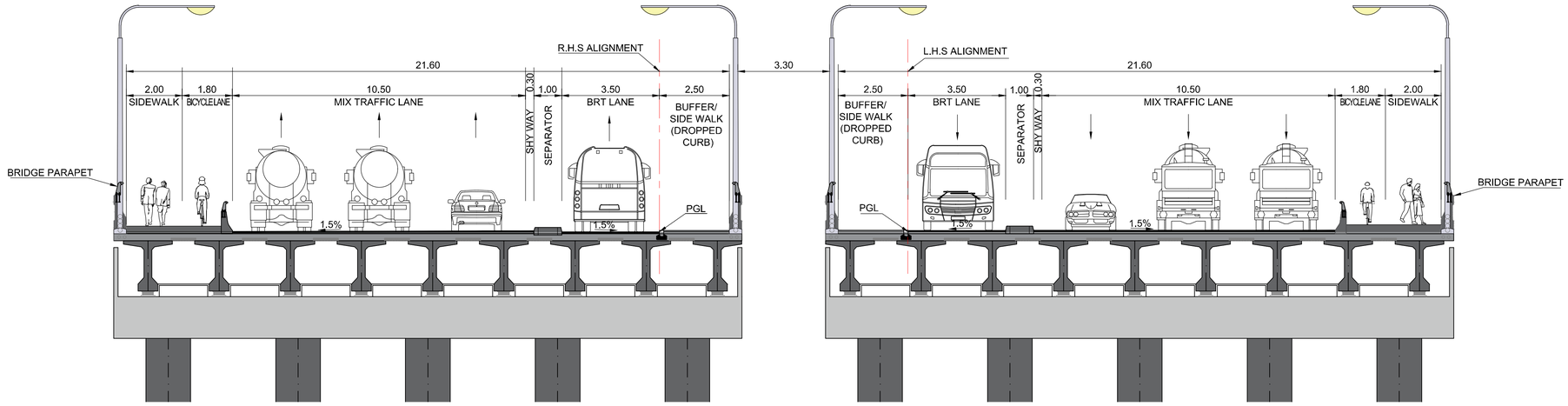
| | | |



SECTION 1-1 @ BRIDGE APPROACH



SECTION 2 -2 @ BRIDGE DECK



SECTION 3-3 @ BRIDGE DECK

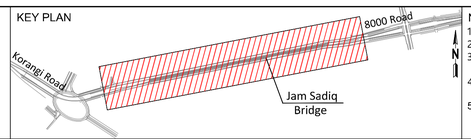
FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
1. All Dimensions are in meter unless otherwise indicated.
2. For Typical Cross -Section Locations refer to dwg. P21161/4309-04-CD-TR-1001
3. The existing street lighting works shall be dismantled, demolished and stacked to designated authorities/places as directed by the engineer
4. Contractor to adapt the barrier design to the actual road condition subject to the engineer approval
5. The structural elements shown in the cross -section are indicative

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

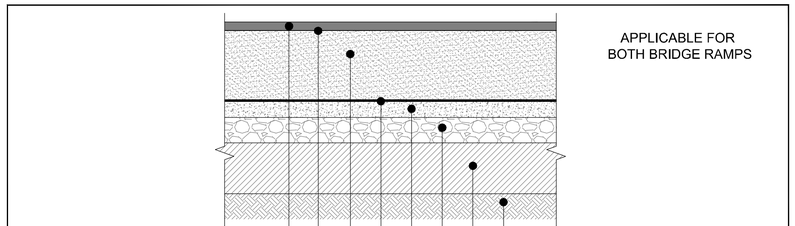
DRAWING TITLE
TYPICAL CROSS SECTIONS

SCALE
N.T.S.
@A1

DATE
12/12/2022

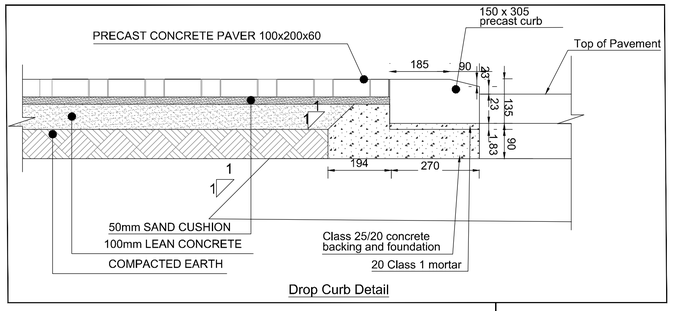
DRAWING NUMBER
P21161-4309-04-CD-TR-3001

REVISION
0

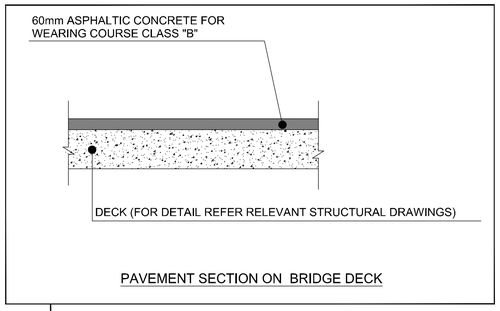

50mm ASPHALT CONCRETE WEARING COURSE
TACK COAT
190mm ASPHALT CONCRETE BASE COURSE (WITH THREE LAYERS: 700mm+60mm+60mm WITH TACK COAT IN BETWEEN)
PRIME COAT
EXISTING GROUND TO BE COMPACTED UP TO 95% MDD AASHTO T-180METHOD-D
150mm AGGREGATE BASE COURSE, CBR ≥ 80%
200mm AGGREGATE SUBBASE COURSE, CBR ≥ 30%
300mm IMPROVED SUBGRADE (CBR≥20%)

APPLICABLE FOR BOTH BRIDGE RAMPS

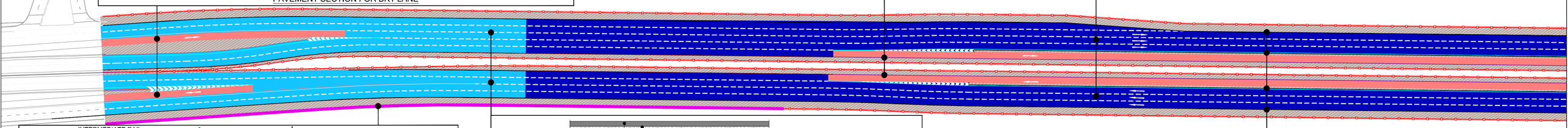
PAVEMENT SECTION FOR BRT LANE

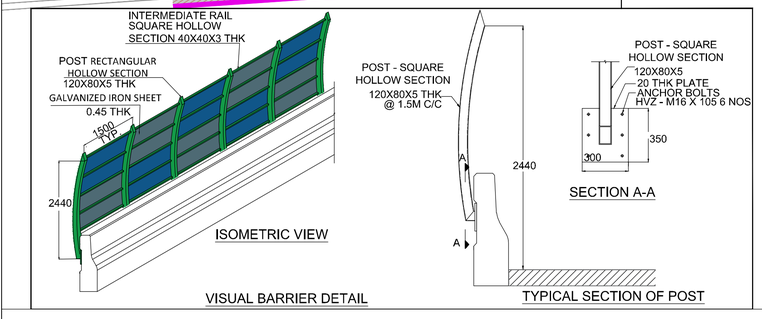


Drop Curb Detail



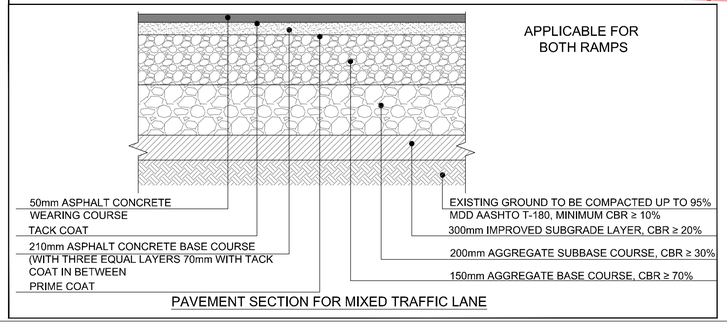
PAVEMENT SECTION ON BRIDGE DECK



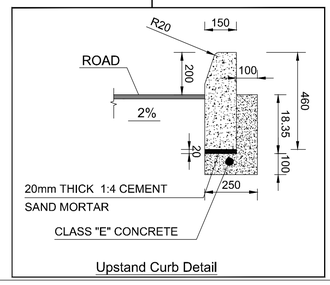


VISUAL BARRIER DETAIL

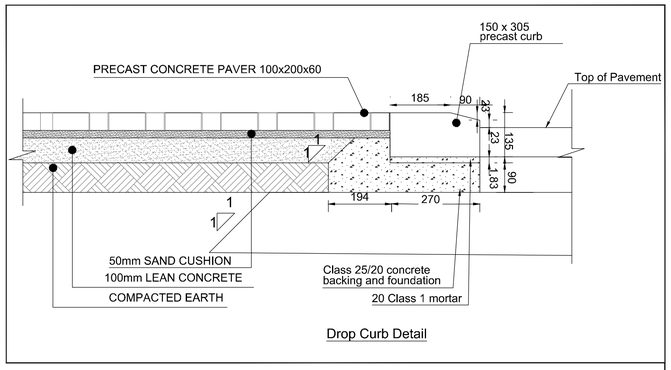
TYPICAL SECTION OF POST


APPLICABLE FOR BOTH RAMPS
50mm ASPHALT CONCRETE WEARING COURSE
TACK COAT
210mm ASPHALT CONCRETE BASE COURSE (WITH THREE EQUAL LAYERS 70mm WITH TACK COAT IN BETWEEN
PRIME COAT
EXISTING GROUND TO BE COMPACTED UP TO 95% MDD AASHTO T-180, MINIMUM CBR ≥ 10%
300mm IMPROVED SUBGRADE LAYER, CBR ≥ 20%
200mm AGGREGATE SUBBASE COURSE, CBR ≥ 30%
150mm AGGREGATE BASE COURSE, CBR ≥ 70%

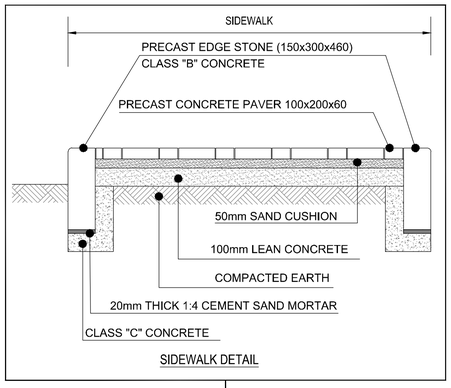
PAVEMENT SECTION FOR MIXED TRAFFIC LANE



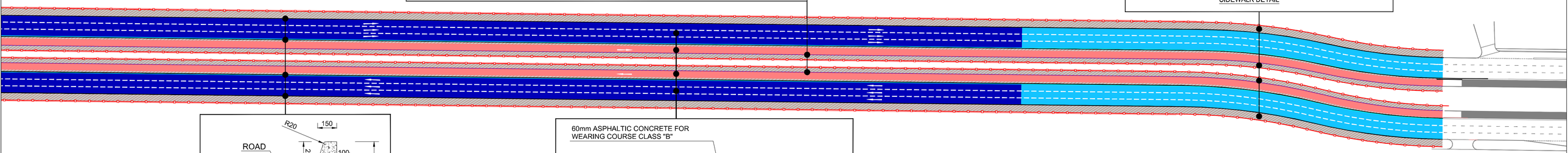
Upstand Curb Detail

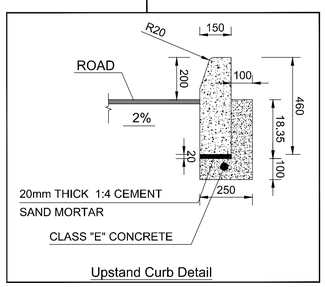


Drop Curb Detail

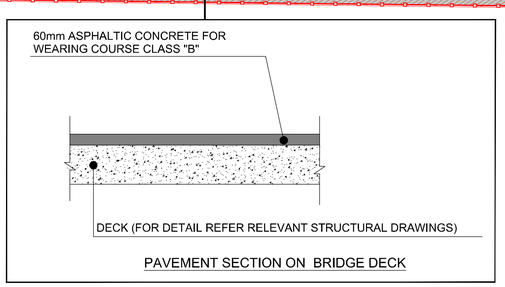


SIDEWALK DETAIL





Upstand Curb Detail



PAVEMENT SECTION ON BRIDGE DECK

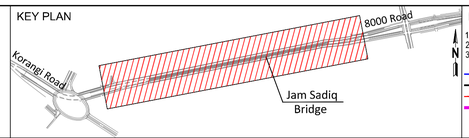
FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE INDICATED.
2. HORIZONTAL DATUM IS REFERENCED TO WGS 84 (UTM) ZONE 42N.
3. FOR TYPICAL ROAD CROSS SECTION, REFER DWG. NO. P21161/4309-04-CD-TR-3001

DROP CURB
UPSTAND CURB
NEW PARAPET
VISUAL BARRIER
NEW BRIDGE
BRIDGE APPROACHES
BRT DEDICATED LANE
SIDEWALK

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/02/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
ROADS TYPICAL DETAILS

SCALE
N.T.S.
@A1

DATE
12/02/2022

DRAWING NUMBER
P21161-4309-04-CD-TR-3002

REVISION
0

L.H.S ALIGNMENT HORIZONTAL CURVES DATA

L.H.S. Alignment					
Begin Alignment	Curve No. 1	Curve No. 2	Curve No. 3	Curve No. 4	End Alignment
000+000.000	PI No. 1	PI No. 2	PI No. 3	PI No. 4	001+400.191
E = 306,234.842	E = 306,300.616	E = 306,346.213	E = 307,511.504	E = 307,573.579	E = 307,604.989
N = 2,747,621.136	N = 2,747,637.574	N = 2,747,655.514	N = 2,747,895.898	N = 2,747,895.973	N = 2,747,902.716
	R = 357.000	R = 300.000	R = 295.200	R = 304.500	
	Lc = 46.386	Lc = 51.421	Lc = 59.695	Lc = 64.014	
	I = 7° 26' 40"	I = 9° 49' 14"	I = 11° 35' 10"	I = 12° 2' 42"	
	CI E = 306,300.616	CI E = 306,346.213	CI E = 307,511.504	CI E = 307,573.579	
	CI N = 2,747,637.574	CI N = 2,747,655.514	CI N = 2,747,895.898	CI N = 2,747,895.973	
	PC E = 306,278.083	PC E = 306,322.229	PC E = 307,482.172	PC E = 307,541.453	
	PC N = 2,747,631.943	PC N = 2,747,646.078	PC N = 2,747,889.847	PC N = 2,747,895.934	
	PT E = 306,322.229	PT E = 306,371.454	PT E = 307,541.453	PT E = 307,604.989	
	PT N = 2,747,646.078	PT N = 2,747,660.721	PT N = 2,747,895.934	PT N = 2,747,902.716	
	Left Hand Curve	Right Hand Curve	Right Hand Curve	Left Hand Curve	

L.H.S ALIGNMENT SETTING OUT DATA

L.H.S. Alignment		
Station	Easting	Northing
000+000.000 BP	306,234.842	2,747,621.136
000+025.000	306,259.096	2,747,627.198
000+044.572 PC	306,278.083	2,747,631.943
000+050.000	306,283.339	2,747,633.299
PI No.1	306,300.616	2,747,637.574
000+075.000	306,307.254	2,747,640.569
000+090.957 PT PC	306,322.229	2,747,646.078
000+100.000	306,330.692	2,747,649.261
PI No.2	306,346.213	2,747,655.514
000+125.000	306,354.546	2,747,656.719
000+142.378 PT	306,371.454	2,747,660.721
000+150.000	306,378.920	2,747,662.261
000+175.000	306,403.404	2,747,667.312
000+200.000	306,427.888	2,747,672.362
000+225.000	306,452.373	2,747,677.413
000+250.000	306,476.857	2,747,682.464
000+275.000	306,501.342	2,747,687.515
000+300.000	306,525.826	2,747,692.566
000+325.000	306,550.311	2,747,697.616
000+350.000	306,574.795	2,747,702.667
000+375.000	306,599.280	2,747,707.718
000+400.000	306,623.764	2,747,712.769
000+425.000	306,648.249	2,747,717.820
000+450.000	306,672.733	2,747,722.871
000+475.000	306,697.218	2,747,727.921
000+500.000	306,721.702	2,747,732.972
000+525.000	306,746.187	2,747,738.023
000+550.000	306,770.671	2,747,743.074
000+575.000	306,795.155	2,747,748.125
000+600.000	306,819.640	2,747,753.176
000+625.000	306,844.124	2,747,758.226
000+650.000	306,868.609	2,747,763.277
000+675.000	306,893.093	2,747,768.328
000+700.000	306,917.578	2,747,773.379
000+725.000	306,942.062	2,747,778.430
000+750.000	306,966.547	2,747,783.481
000+775.000	306,991.031	2,747,788.531
000+800.000	307,015.516	2,747,793.582
000+825.000	307,040.000	2,747,798.633
000+850.000	307,064.485	2,747,803.684
000+875.000	307,088.969	2,747,808.735
000+900.000	307,113.454	2,747,813.786
000+925.000	307,137.938	2,747,818.836
000+950.000	307,162.422	2,747,823.887
000+975.000	307,186.907	2,747,828.938
001+000.000	307,211.391	2,747,833.989
001+025.000	307,235.876	2,747,839.040
001+050.000	307,260.360	2,747,844.090
001+075.000	307,284.845	2,747,849.141
001+100.000	307,309.329	2,747,854.192
001+125.000	307,333.814	2,747,859.243
001+150.000	307,358.298	2,747,864.294
001+175.000	307,382.783	2,747,869.345
001+200.000	307,407.267	2,747,874.395
001+225.000	307,431.752	2,747,879.446
001+250.000	307,456.236	2,747,884.497
001+275.000	307,480.721	2,747,889.548
001+276.482 PC	307,482.172	2,747,889.847
001+300.000	307,505.370	2,747,893.677
PI No.3	307,511.504	2,747,895.898
001+325.000	307,530.280	2,747,895.709
001+336.177 PT PC	307,541.453	2,747,895.934
001+350.000	307,555.271	2,747,896.265
PI No.4	307,573.579	2,747,895.973
001+375.000	307,580.168	2,747,898.453
001+400.000	307,604.802	2,747,902.676
001+400.191 PT EP	307,604.989	2,747,902.716

R.H.S ALIGNMENT HORIZONTAL CURVES DATA

R.H.S. Alignment				
Begin Alignment	Curve No. 1	Curve No. 2	Curve No. 3	End Alignment
000+000.000	PI No. 1	PI No. 2	PI No. 3	001+400.023
E = 306,235.437	E = 306,379.946	E = 307,509.660	E = 307,577.132	E = 307,607.606
N = 2,747,618.927	N = 2,747,653.385	N = 2,747,886.430	N = 2,747,884.620	N = 2,747,890.492
	R = 1,500.000	R = 315.300	R = 284.700	
	Lc = 45.971	Lc = 72.599	Lc = 61.827	
	I = 1° 45' 21"	I = 13° 11' 32"	I = 12° 26' 33"	
	CI E = 306,379.946	CI E = 307,509.660	CI E = 307,577.132	
	CI N = 2,747,653.385	CI N = 2,747,886.430	CI N = 2,747,884.620	
	PC E = 306,357.586	PC E = 307,473.951	PC E = 307,546.107	
	PC N = 2,747,648.053	PC N = 2,747,879.064	PC N = 2,747,885.453	
	PT E = 306,402.459	PT E = 307,546.107	PT E = 307,607.606	
	PT N = 2,747,658.029	PT N = 2,747,885.453	PT N = 2,747,890.492	
	Right Hand Curve	Right Hand Curve	Left Hand Curve	

R.H.S ALIGNMENT SETTING OUT DATA

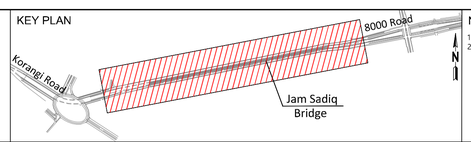
R.H.S. Alignment		
Station	Easting	Northing
000+000.000 BP	306,235.437	2,747,618.927
000+025.000	306,259.755	2,747,624.725
000+050.000	306,284.073	2,747,630.524
000+075.000	306,308.391	2,747,636.323
000+100.000	306,332.709	2,747,642.121
000+125.000	306,357.028	2,747,647.920
000+125.574 PC	306,357.586	2,747,648.053
PI No.1	306,379.946	2,747,653.385
000+150.000	306,381.391	2,747,653.525
000+171.545 PT	306,402.459	2,747,658.029
000+175.000	306,405.843	2,747,658.727
000+200.000	306,430.328	2,747,663.778
000+225.000	306,454.812	2,747,668.829
000+250.000	306,479.297	2,747,673.880
000+275.000	306,503.781	2,747,678.931
000+300.000	306,528.266	2,747,683.981
000+325.000	306,552.750	2,747,689.032
000+350.000	306,577.235	2,747,694.083
000+375.000	306,601.719	2,747,699.134
000+400.000	306,626.204	2,747,704.185
000+425.000	306,650.688	2,747,709.236
000+450.000	306,675.173	2,747,714.286
000+475.000	306,699.657	2,747,719.337
000+500.000	306,724.141	2,747,724.388
000+525.000	306,748.626	2,747,729.439
000+550.000	306,773.110	2,747,734.490
000+575.000	306,797.595	2,747,739.541
000+600.000	306,822.079	2,747,744.591
000+625.000	306,846.564	2,747,749.642
000+650.000	306,871.048	2,747,754.693
000+675.000	306,895.533	2,747,759.744
000+700.000	306,920.017	2,747,764.795
000+725.000	306,944.502	2,747,769.846
000+750.000	306,968.986	2,747,774.896
000+775.000	306,993.471	2,747,779.947
000+800.000	307,017.955	2,747,784.998
000+825.000	307,042.440	2,747,790.049
000+850.000	307,066.924	2,747,795.100
000+875.000	307,091.408	2,747,800.151
000+900.000	307,115.893	2,747,805.201
000+925.000	307,140.377	2,747,810.252
000+950.000	307,164.862	2,747,815.303
000+975.000	307,189.346	2,747,820.354
001+000.000	307,213.831	2,747,825.405
001+025.000	307,238.315	2,747,830.455
001+050.000	307,262.800	2,747,835.506
001+075.000	307,287.284	2,747,840.557
001+100.000	307,311.769	2,747,845.608
001+125.000	307,336.253	2,747,850.659
001+150.000	307,360.738	2,747,855.710
001+175.000	307,385.222	2,747,860.760
001+200.000	307,409.707	2,747,865.811
001+225.000	307,434.191	2,747,870.862
001+250.000	307,458.675	2,747,875.913
001+265.597 PC	307,473.951	2,747,879.064
001+275.000	307,483.187	2,747,880.826
001+300.000	307,507.956	2,747,884.164
PI No.2	307,509.660	2,747,886.430
001+325.000	307,532.913	2,747,885.530
001+338.196 PT PC	307,546.107	2,747,885.453
001+350.000	307,557.910	2,747,885.381
PI No.3	307,577.132	2,747,884.620
001+375.000	307,582.859	2,747,886.843
001+400.000	307,607.584	2,747,890.488
001+400.023 PT EP	307,607.606	2,747,890.492

FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN


NOTES & LEGEND
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.
2. FOR TYPICAL CROSS SECTION LOCATION REFER TO DWG. P21161/4309-04-TD-TR-1001

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

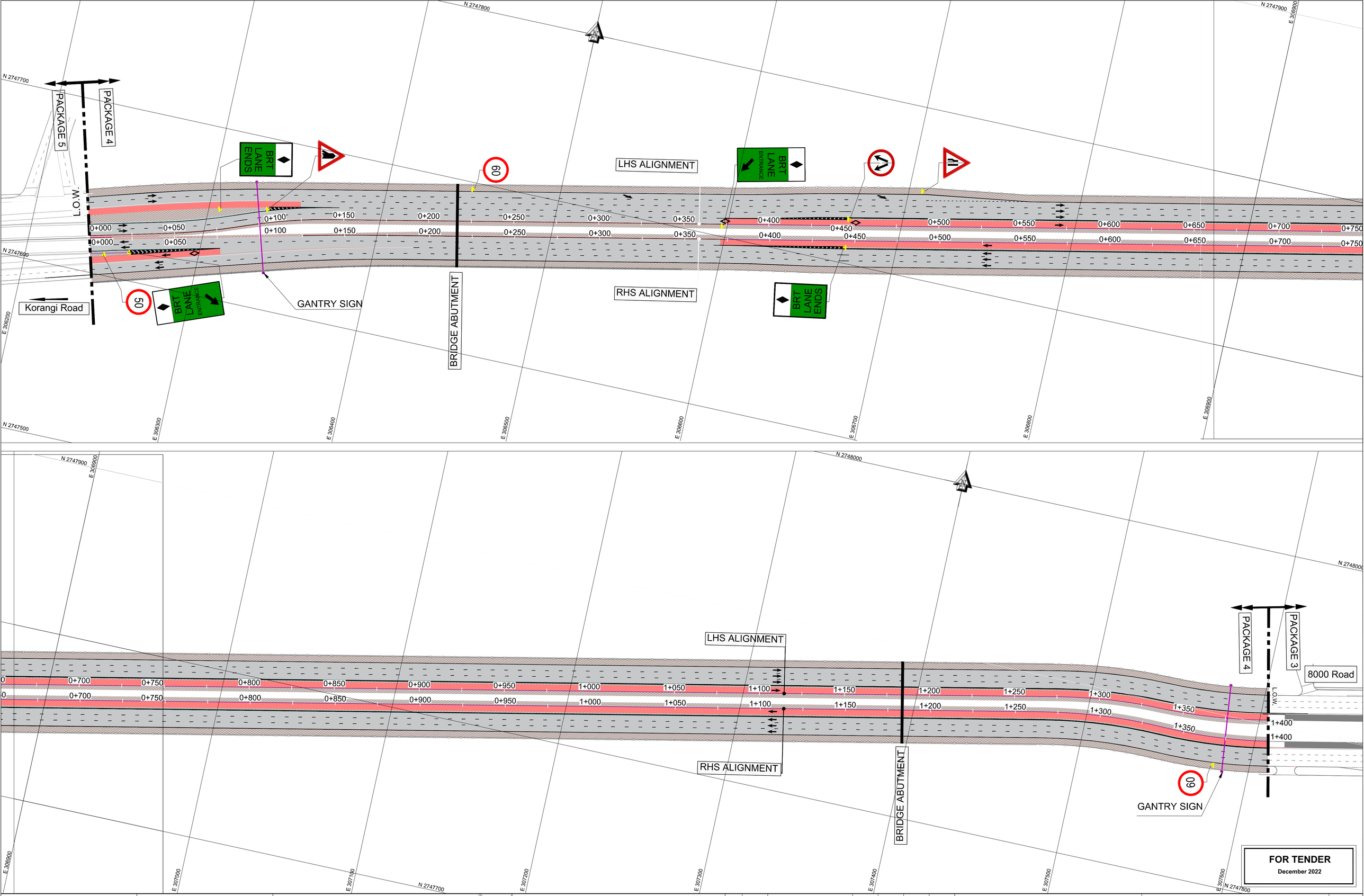
DRAWING TITLE
ALIGNMENTS SETTING OUT DATA

SCALE
N.T.S.
@A1

DATE
12/12/2022

DRAWING NUMBER
P21161-4309-04-CD-TR-6001

REVISION
0



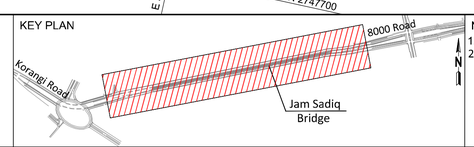
FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
1. THE PROPOSED SINGS ARE BASED ON MUTCD 2009 EDITION
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL NECESSARY DESIGN AND CONSTRUCTION DETAILS RELATED TO THE GANTRY SIGN STRUCTURES, INCLUDING BUT NOT LIMITED TO THE SIGN FACE INFORMATION, SIGN FACE DIMENSIONS, STRUCTURE DESIGN, FOUNDATION DESIGN, SUPPORT AND MAINTENANCE DETSILS, ETC... THE INFORMATION SHOULD BE INCLUDED AS PART OF THE CONTRACTOR SUBMITTAL OF THE DETAILED DESIGN STAGE, WHICH SHOULD BE SUBMITTED FOR THE ENGINEER'S APPROVAL

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.M.A.	Z.A.	M.AZ.	A.H.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
ENLARGED ROAD LAYOUT PLAN

SCALE
1:1000 @A1

DATE
12/12/2022

DRAWING NUMBER
P21161-4309-04-CD-TR-7001

REVISION
0

A. GENERAL

1- THE NOTES SHALL BE READ IN CONJUNCTION WITH TENDER DOCUMENTS
2- ALL STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH ENVIRONMENTAL, ELECTRICAL, HIGHWAY AND ALL OTHER RELATED DRAWINGS.
3- DO NOT SCALE FROM DRAWINGS. ALL DIMENSIONS SHALL BE READ OR COMPUTED.
4- UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN (mm), ALL LEVELS IN METERS (m), ALL CHAINAGES IN KILOMETERS (Km) + METERS (m) AND ALL BEARINGS ARE GIVEN IN DEGREES, MINUTES AND SECONDS.

B. DESIGN

1- THE DESIGN LIFE OF THE BRIDGE SHALL BE 75 YEARS

B.1 CODES AND STANDARDS

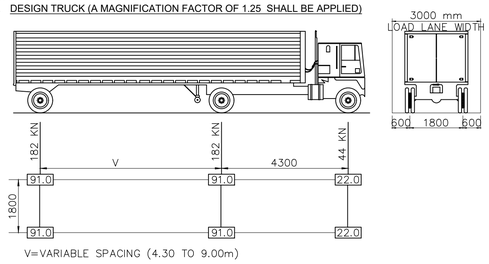
1- THE DESIGN SHALL BE IN ACCORDANCE WITH:
- AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, LATEST EDITION.
  FOR ANALYSIS AND DESIGN FOR ALL LOADS AND LOAD COMBINATIONS.
- WEST PAKISTAN CODE OF PRACTICE FOR HIGHWAY BRIDGES, WPCHB 1967.
  FOR LOCAL VEHICULAR LOADS, WHEEL CONFIGURATION AND IMPACT FACTORS
- AMERICAN CONCRETE INSTITUTE, ACI-318-19.
  FOR ANALYSIS, DESIGN AND DETAILING, ONLY IN CASE SUCH DETAILS ARE NOT SPECIFIED IN AASHTO.
  FOR ASSESSMENT OF THE EXPOSURE CONDITIONS AND DURABILITY REQUIREMENTS OF CONCRETE

2- WHERE REFERENCE STANDARDS FOR TESTING MATERIALS AND WORKMANSHIP ARE NOT EXPLICITLY STATED ON THE DRAWINGS AND CONTRACT DOCUMENTS, LATEST RELEVANT STANDARD OF AASHTO, ASTM OR BS SHALL BE APPLICABLE.

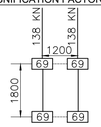
B.2 LIVE LOADS

1. THE HIGHWAY LOADING SHALL BE BASED ON:
   1.1. AASHTO LRFD DESIGN LOAD AND SHALL CONSIST OF A COMBINATION OF THE DESIGN TRUCK OR DESIGN TANDEM AND WITH THE DESIGN LANE LOAD.

1.1.1. DESIGN TRUCK (A MAGNIFICATION FACTOR OF 1.25 SHALL BE APPLIED)



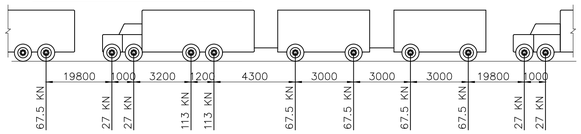
1.1.2. DESIGN TANDEM (A MAGNIFICATION FACTOR OF 1.25 SHALL BE APPLIED)



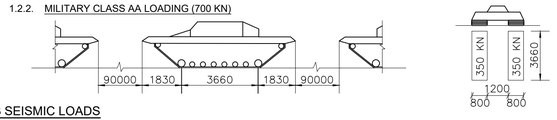
1.1.3. DESIGN LANE LOAD (A MAGNIFICATION FACTOR OF 1.25 SHALL BE APPLIED):
THE DESIGN LANE LOAD SHALL CONSIST OF A LOAD OF 11.0 KN/m UNIFORMLY DISTRIBUTED IN THE LONGITUDINAL DIRECTION AND TRANSVERSALLY DISTRIBUTED OVER 3m WIDTH.

1.2. WPCHB LOAD AND SHALL CONSIST OF VEHICLE TRAIN CLASS A LOADING OR MILITARY CLASS AA LOADING:

1.2.1. VEHICLE TRAIN CLASS A LOADING (550 KN)



1.2.2. MILITARY CLASS AA LOADING (700 KN)



B.3 SEISMIC LOADS

1. SEISMIC LOAD SHALL BE CALCULATED AS PER AASHTO LRFD LATEST EDITION, WHERE:
   - SEISMIC ZONE = ZONE 2B AS BCP 2007
   - PGA = 0.25g (AASHTO LRFD LATEST EDITION)
   - Ss = 0.625
   - S1 = 0.25
   - SITE CLASS = S_D
   - OPERATION CATEGORY = ESSENTIAL

B.4 TEMPERATURE & HUMIDITY

1. THE MAXIMUM AND MINIMUM TEMPERATURE IN KARACHI SHALL BE TAKEN AS FOLLOWS
   MAXIMUM TEMPERATURE = 48°C
   MINIMUM TEMPERATURE = 04°C
   RELATIVE HUMMIDITY = 70%

B.5 SCOUR

1. THE STABILITY OF BRIDGE FOUNDATION SHALL BE INVESTIGATED FOR SCOUR CONDITIONS TAKING INTO CONSIDERATION THE ACCURATE RIVER BED SURVEY (BATHYMETRICAL SURVEY)
2. SCOUR MITIGATIONS SHALL BE DESIGNED BY THE CONTRACTOR AND SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. THE CONTACTOR SHALL PROVIDE THE NECESSARY SCOUR PROTECTION FOR SUBSTRUCTURES.
3. ALL THE PIERS \PILES AND OTHER PORTIONS OF THE SUBSTRUCTURE WHICH ARE SUBJECTED TO FORCES OF FLOWING WATER OR DRIFT SHALL BE DESIGNED TO RESIST THE STREAM INDUCED FORCES.
4. THE PILES DIAMETERS AND LENGTHS SHALL BE INDICATED UPON FINALIZING THE SCOUR DEPTH BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL.
5. ALL THE PIERS \PILES AND OTHER PORTIONS OF THE SUBSTRUCTURE WHICH ARE SUBJECT TO FORCES OF FLOWING WATER OR DRIFT SHALL BE DESIGNED TO RESIST THE STREAM INDUCED FORCES.

B.6 CRACK WIDTH CRITERIA

1. FOR THE SERVICEABILITY LIMIT STATE, THE DESIGN WILL SEEK TO LIMIT SURFACE CRACK WIDTHS TO THE FOLLOWING LIMITS.
2. SURFACES IN SEA WATER & SUBJECT TO SEA WATER SPRAY, WETTING AND DRY = 0.15mm
   SURFACES EXPOSED TO MOIST AIR = 0.25mm

C. MATERIALS

C.1 CONCRETE:

1. MINIMUM CONCRETE CONCRETE COMPRESSIVE CYLINDER STRENGTH AT 28 DAYS SHALL BE AS FOLLOWS

LOCATION	CONCRETE STRENGTH (MPa)
BLINDING	15
PRECAST BEAMS	50
CAST IN-SITU SLABS, PARAPETS AND PRECAST SLABS	35
CROSS HEAD (TRANSOM), PIER, PILES, ABUTMENT WALLS,PILECAPS AND RETAINING WALLS	35

2. CONCRETE MIXTURES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS
3. THE DURABILITY MEASURES AND REQUIREMENTS FOR CONCRETE SHALL BE VALIDATED/CONFIRMED BASE ON THE CHEMICAL COMPOSITION TEST RESULTS OF SOIL AND GROUNDWATER SAMPLES OF THE PLANNED SITE INVESTIGATION ONCE MADE AVAILABLE.
4. POLYPROPYLENE FIBRES SHALL BE USED IN STRUCTURAL CONCRETE DECK AS PER MANUFACTURER'S RECOMMENDATIONS

C.2 REINFORCEMENT

1. REINFORCING STEEL SHALL BE OF GRADE-60 WITH MINIMUM YIELD STRENGTH OF 500 MPA
2. REINFORCING STEEL PROPERTIES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS

D. REINFORCEMENT DETAILING

1- LAP LENGTH FOR ANY REINFORCEMENT BAR SHALL BE IN ACCORDANCE WITH AASHTO LRFD.
2- UNLESS NOTED OTHERWISE, LAPS IN REINFORCEMENT BARS SHALL BE STAGGERED.
3- ALL BENDING OF REINFORCEMENT SHALL BE DONE BY COLD BENDING.
4- WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED.
5- SPLICES IN THE REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN ON THE DRAWINGS OR AS OTHERWISE APPROVED BY THE ENGINEER.

E. GENERAL ABBREVIATIONS AND SYMBOLS

S.O.L	SETTING-OUT LINE	m	METERS
ALIGN.	ALIGNMENT	No.	NUMBER
STA.	STATION ALONG H.S.L	Dia.	DIAMETER
N.G.L.	NATURAL GROUND LEVEL	TYP.	TYPICAL
F.R.L.	FINISHED ROAD LEVEL	℄	CENTER LINE
C.J.	CONSTRUCTION JOINT	C/C	CENTER TO CENTER
E.J.	EXPANSION JOINT	N.T.S	NOT TO SCALE
R.C.	REINFORCED CONCRETE	KN	KILONEWTON
mm	MILLIMETERS	H.F.L.	HIGH FLOODING LEVEL

F. PRESTRESSING

1- THE PRESTRESSING SYSTEM SHALL BE OF A WELL PROVEN INTERNATIONAL SYSTEM AND TO THE APPROVAL OF THE ENGINEER.
2- PRESTRESSING STRANDS SHALL BE 7 WIRES LOW RELAXATION STRANDS TO ASTM A416-90 GRADE 270 OR BS EN5896 WITH NOMINAL DIAMETER OF 15.24 mm AND MINIMUM ULTIMATE TENSILE STRENGTH OF 1862 MPa.
3- TENSIONING OF THE STRANDS SHALL NOT COMMENCE UNTIL THE CONCRETE IN ANY PART OF THE WORKS AFFECTED BY THE TENSIONING HAS ATTAINED THE STRENGTH VALUE OF 50 MPa BUT NOT BEFORE 3 DAYS AFTER POUR.
4- PRESTRESSING FORCES AND SEQUENCE OF PRESTRESSING SHALL BE SUBJECT TO CONFIRMATION OF THE ENGINEER AFTER APPROVAL OF PRESTRESSING SUPPLIER.
5- IF SPECIFIED STRESSING HAS BEEN APPLIED AND THE EXPECTED ELONGATION HAS NOT BEEN ATTAINED STRESSING MAY CONTINUE TO THE EXPECTED ELONGATION. DO NOT EXCEED THE MAXIMUM APPLIED FORCE BY MORE THAN 5%. IF THE EXPECTED ELONGATION IS OBTAINED BEFORE REACHING MAXIMUM FORCE THE STRESSING MAY CONTINUE TO THE EXPECTED FORCE. DO NOT EXCEED THE MAXIMUM ELONGATION BY MORE THAN 5%. IF THE ABOVE PROCEDURE FAILS TO PRODUCE SATISFACTORY RESULTS HALT THE OPERATION AND REPORT IT TO THE ENGINEER FOR FURTHER PROCEDURES.
6- CHECK ELONGATION OF STRANDS 24 HOURS AFTER STRESSING IS COMPLETE. CHECK FOR SIGNIFICANT SLOW SLIPPAGE. IF AVERAGE SLOW SLIPPAGE IS GREATER THAN 3mm REPORT TO THE ENGINEER IMMEDIATELY FOR FURTHER INSTRUCTIONS.
7- AS SOON AS CABLES MEET STRESSING AND ELONGATION REQUIREMENTS SPECIFIED IN THE PREVIOUS TWO NOTES, GROUTING SHALL BE APPLIED IMMEDIATELY. CONTRACTOR TO TAKE CARE NOT TO BLOCK REMAINING UNSTRESSED CABLES WHILE GROUTING.
8- THE ANCHORAGE PULL IN AT LOCKING OFF SHALL NOT EXCEED 6mm.
9- TENDONS EXTENSION PRIOR TO LOCK OFF SHALL BE CALCULATED BASED ON THE ACTUAL MODULUS OF ELASTICITY OF STRANDS AND ACTUAL CROSS SECTIONAL AREA.
10- ALL JACKS AND GAUGES SHALL BE CALIBRATED PRIOR TO ANY PRESTRESSING WORK.
11. FRICTION COEFFICIENT AND WOBBLE FACTOR SHALL BE CONFIRMED BY TEST PRIOR TO FINAL PRESTRESSING AND SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL

G. CONSTRUCTION

1. FINISHES TO ALL EXPOSED FORMED SURFACES SHALL BE OF GREAT IMPORTANCE AND THE CONTRACTOR SHALL DEMONSTRATE BY MEANS OF TESTS BEFORE WORK COMMENCES THAT EACH TYPE OF FINISH SPECIFIED CAN BE CONSISTENTLY ACHIEVED TO THE SATISFACTION OF THE ENGINEER.
2. THE CONCRETE PROTECTIVE COVER FOR REINFORCEMENT SHALL BE AS FOLLOWS:

PILES, PILE CAPS AND PIERS	75mm
ABUTMENT WALLS AND RETAINING WALLS (AGAINST SOIL)	75mm
ABUTMENT WALLS AND RETAINING WALLS (EXPOSED SURFACE)	50mm
CROSS HEAD (TRANSOM)	50mm
PRECAST BEAMS AND PRECAST SLABS	50mm
CAST-IN-SITU SLABS AND PARAPET	50mm

3. CONSTRUCTION JOINTS LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
4. ALL FORMS, FALSE WORK ERECTION PROCEDURES AND MATERIALS ETC. SHALL BE APPROVED BY THE ENGINEER BEFORE THEY CAN BE USED ON SITE.
5. ALL EXPOSED CORNERS SHALL HAVE 20X20 CHAMFERS UNLESS OTHERWISE SPECIFIED.
6. ALL LEVELS AND SETTING OUT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
7. IN CASE OF DISCREPANCY BETWEEN THE SITE CONDITIONS AND THE DESIGN DRAWINGS, THE CONTRACTOR SHALL REPORT HIS FINDINGS TO THE ENGINEER IMMEDIATELY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE STRUCTURE AND ALL TEMPORARY WORKS DURING CONSTRUCTION.
9. THE CONTRACTOR SHALL INFORM THE ENGINEER ABOUT ANTICIPATED CONSTRUCTION LOADS ON THE STRUCTURE AND OBTAIN ENGINEER'S APPROVAL THEREOF BEFORE COMMENCING WORK.
10- THE CONTRACTOR SHALL BRING TO THE NOTICE OF THE ENGINEER DISCREPANCIES OR AMBIGUITIES IF ANY, FOR HIS CLARIFICATIONS/ INSTRUCTIONS, PRIOR TO THE START OF WORK.
11. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO SPECIFICATIONS OF THE CONTRACT. IN ABSENCE OF ANY EXPRESS OR IMPLIED SPECIFICATION IN THE CONTRACT, ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO RELEVANT AMERICAN STANDARDS AND SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
12. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE INTRODUCED SUBSTRUCTURE ELEMENTS AGAINST ANY EXISTING BURIED UNDERGROUND ELEMENTS.
13. ENSURE THAT ALL CONSTRUCTION JOINTS SHALL BE CLEAN, FREE OF ALLIANCE AND INTENTIONALLY ROUGHENED TO AN AMPLITUDE OF 6.5mm. OBTAIN APPROVAL FROM THE ENGINEER FOR ALL CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS.
14. THE COMMENCEMENT OF CONSTRUCTION SHALL NOT START BEFORE THE CONFIRMATION / REVISION OF GEOTECHNICAL RECOMMENDATIONS BASED ON THE RESULTS OF THE SUBSURFACE INVESTIGATION THAT SHALL BE CARRIED OUT BY THE CONTRACTOR.
15. CONCRETE FOR THE BARRIERS SHALL BE PLACED NO SOONER THAN 20 DAYS AFTER PLACING OF CONCRETE IN THE DECK.
16. ALL EXPOSED CONCRETE SHALL BE FAIR FACED. SPECIAL ATTENTION SHALL BE GIVEN TO SOFFIT OF GIRDERS. GIRDERS SHALL BE CAST ON SMOOTH SURFACE TO YIELD FAIR FACE AT THE SOFFIT.
17. WHILE PLACING, ALL GIRDERS SHALL BE ADEQUATELY BRACED FOR SAFETY AND STABILITY AS PER APPROVED BRACING SYSTEM.
18. APPROVED STACKING HANDLING AND LIFTING DEVICE SHALL BE USED FOR ERECTION OF PRECAST ELEMENTS AND GIRDERS.
19. MANUFACTURING OF PRECAST CONCRETE ELEMENTS SHALL BE DONE IN STRICT CONFORMANCE WITH THE RELEVANT SPECIFICATIONS.
20. BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS FOR ELECTRICAL, MECHANICAL, PLUMBING AND STRUCTURAL MEMBERS ARE PROPERLY LOCATED IN PLACE.
21. ALL REINFORCING STEEL SHALL BE HELD FIRMLY IN PLACE BEFORE AND DURING THE PLACING OF CONCRETE BY MEANS OF WIRES AND SUPPORTS, ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.
22. ALL EXPOSED SURFACES SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
23. ALL THE BURIED SURFACES OTHER THAN PILES SHALL BE WATERPROOFED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS
24. PILES SHALL BE PROTECTED USING SACRIFICIAL STEEL LINER WITH A MINIMUM THICKNESS OF 10 MM. REQUIRED THICKNESS SHALL BE DETERMINED BASED ON THE DESIGN AND CONSTRUCTION INSTALLATION REQUIREMENTS AS WELL AS THE EXPOSURE CONDITIONS SUCH THAT IT SURVIVES FOR 75 YEARS WHICH IS THE DESIGN LIFE OF THE BRIDGE.
25. THE CONTRACTOR SHALL INVESTIGATE THE EXACT LOCATION OF THE SURROUNDING UTILITIES OR RELOCATION AS PER APPROVED PLAN BY AUTHORITY. IN GENERAL, THE PROTECTION OF THE EXISTING UTILITIES DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR.
26. MINIMUM DISTANCE BETWEEN THE EDGE PILE OF THE NEW BRIDGE AND THE NEAREST PILE OF THE EXISTING BRIDGE SHALL BE 4 TIMES THE LARGER DIAMETER.

H. GEOTECHNICAL RECOMMENDATIONS

1. A DETAILED GEOTECHNICAL SITE INVESTIGATION PROGRAM AT THE BRIDGE FOUNDATIONS SHALL BE CARRIED OUT BY THE CONTRACTOR BEFORE THE START OF THE PILES DESIGN AND CONSTRUCTION WORKS. THE GEOTECHNICAL SITE INVESTIGATION REPORT SHOULD BE FORWARDED TO THE ENGINEER TO REVIEW AND CHECK THE PILES GEOTECHNICAL DESIGN AND ASSUMPTIONS TO CONFIRM AND BELOW THE FOLLOWING RECOMMENDATIONS.
2. THE FOLLOWING CONCEPTUAL FOUNDATION RECOMMENDATIONS WERE PREPARED BASED ON THE AVAILABLE SITE INVESTIGATIONS. THE CONTRACTOR SHALL REVISIT THE RECOMMENDATIONS BASED ON THE RESULTS OF THE CONTRACTOR'S INVESTIGATIONS TO BE CARRIED TO DEFINE THE SOIL AND ROCK LITHOLOGY AND GEOTECHNICAL PROPERTIES AT THE ELEMENTS SHOWN IN THE DRAWINGS.
3. BORED CAST IN-SITU PILES ARE TO BE USED TO SUPPORT THE BRIDGE LOADS.
4. THE PILE LENGTHS AND DIAMETERS SHALL BE DETERMINED/REVISITED BASED ON THE RESULTS OF THE CONTRACTOR'S GEOTECHNICAL INVESTIGATION. THE PILE SHALL BE DESIGNED CONSIDERING THE SCOUR DEPTH ESTIMATED BY THE CONTRACTOR AS A PART OF HIS HYDROLOGY STUDY.
5. THE PROCEDURE AND METHODOLOGY FOR LOWERING THE REINFORCEMENT CAGE AND CONCRETING BY TREMIE SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.
6. THE PILES HOLES SHALL BE PROPERLY SUPPORTED DURING CONSTRUCTION TO AVOID SOIL COLLAPSE. A CASING SHALL BE MAINTAINED TO SUPPORT THE SIDES OF THE PILES HOLES DURING CONSTRUCTION WHERE NEEDED. THE CONTRACTOR SHOULD ENSURE THAT THE BOTTOM OF THE PILES IS PROPERLY CLEANED.
7. WHERE THE MINIMUM THICKNESS OF THE CASING IS SPECIFIED IN THE DRAWINGS, IT SHALL BE CONSIDERED TO SATISFY STRUCTURAL DESIGN REQUIREMENTS ONLY. THE CONTRACTOR SHALL INCREASE THE CASING THICKNESS FROM THE MINIMUM SPECIFIED THICKNESS AS NECESSARY TO SATISFY THE CONSTRUCTION INSTALLATION REQUIREMENTS.
8. THE PILE SHAFT SHOULD BE KEPT VERTICALLY PLUMBED AND AS SPECIFIED IN THE SPECIFICATIONS.
9. THE DESIGN PILES CAPACITY SHALL BE VERIFIED CONSIDERING PILE LOAD TESTS RESULT
10. PILE TESTS ON PRELIMINARY AND WORKING PILES SHALL BE CARRIED OUT AS PER PROJECT SPECIFICATIONS.
11. PRIOR TO CARRYING OUT ANY PILE TESTS, THE CONTRACTOR SHALL SUBMIT A DETAILED METHOD STATEMENT FOR THE PILE TESTING TO THE ENGINEER'S REVIEW AND APPROVAL. THE CONTRACTOR SHALL ALSO PROPOSE THE LOCATION FOR BOTH PRELIMINARY AND WORKING PILES TO THE ENGINEER'S APPROVAL.
12. THE SOIL/GROUNDWATER IS CONSIDERED AGGRESSIVE, REQUIRING PROTECTION AGAINST THE CHEMICAL AGGRESSIVENESS.
13. TOLERANCE IN PLAN POSITION, VERTICALITY, AND CUT OFF LEVEL OF THE PILE SHALL BE AS PER PROJECT SPECIFICATIONS.
14. DESIGN SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF AASHTO LRFD.
15. THE CONTRACTOR SHALL DESIGN, SUPPLY, AND INSTALL FOR ANY TEMPORARY WORKS SUCH AS COFFERDAMS AND DEWATERING IF REQUIRED DURING CONSTRUCTION AT NO EXTRA TIME OR COST TO THE CONTRACT.
16. THE CONTRACTOR SHALL DESIGN, SUPPLY, AND INSTALL ADEQUATE SHORING & SUPPORT THE SIDES OF ALL EXCAVATIONS WHERE REQUIRED TO SAFEGUARD THE WORKMAN AND PROTECT ANY ADJACENT STRUCTURES OR TEMPORARY WORKS AT NO EXTRA TIME OR COST TO THE CONTRACT.
17. THE AVAILABLE LIMITED SUBSURFACE INVESTIGATIONS INDICATE THE PRESENCE OF DEEP SOFT DEPOSITS AT THE BRIDGE APPROACHES, LIMITING THE USE OF HIGH APPROACH FILLS. THIS WAS CONSIDERED IN THE PRESENTED CONCEPTUAL DESIGN. NEVERTHELESS, THE D&B CONTRACTOR MAY CHANGE THE PRESENTED CONCEPTUAL DESIGN IN THE DESIGN DEVELOPMENT BASED ON THE RESULTS OF THE DETAILED GEOTECHNICAL SITE INVESTIGATIONS AS A PART OF HIS DESIGN RESPONSIBILITIES.
18. SHALLOW FOUNDATIONS SHALL BE UTILIZED FOR THE APPROACH STRUCTURES, PROVIDED THAT THE DETAILED SITE INVESTIGATION CARRIED OUT BY THE CONTRACTOR SHOWS THAT THE SOIL CONDITIONS ARE COMPETENT ENOUGH TO CARRY THE LOADS IMPOSED ON THE APPROACH STRUCTURES SAFELY AND WITHOUT EXCESSIVE DEFORMATIONS. ALTERNATIVELY, THE CONTRACTOR SHALL CONSIDER EITHER GROUND IMPROVEMENT TO ALLOW SHALLOW FOUNDATIONS OR TO ADOPT PILE FOUNDATION, WHICHEVER IS MORE VIABLE. THE CONTRACTOR SHALL CARRY THIS AS PART OF HIS DESIGN AND BUILD DUTIES AND WITH NO EXTRA COST OR TIME TO THE CONTRACT.

I. DRAINAGE

1. DECK DRAINS SHALL BE DESIGNED AND LOCATED SUCH THAT SURFACE WATER FROM THE BRIDGE DECK OR ROAD SURFACE IS DIRECTED AWAY FROM THE BRIDGE SUPERSTRUCTURE ELEMENTS AND THE SUBSTRUCTURE.
2. RUNOFF FROM BRIDGE DECKS AND DECK DRAINS SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH ENVIRONMENTAL AND SAFETY REQUIREMENTS.

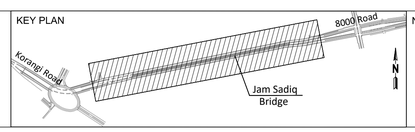
FOR TENDER
DECEMBER 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	11/12/22	APPROVED ISSUE	I.Y.	S.E./A.M.	Y.M.	E.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

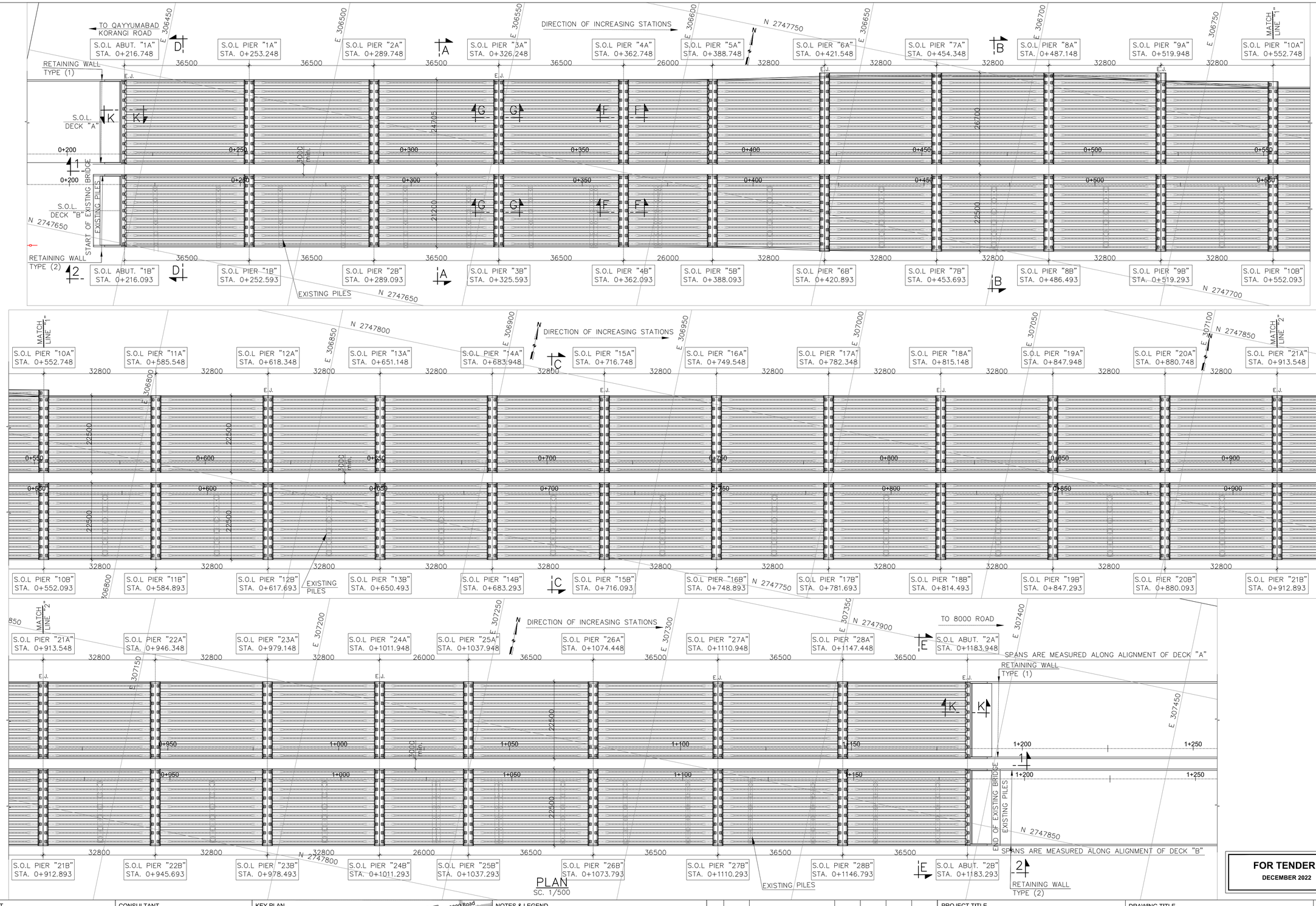
DRAWING TITLE
GENERAL NOTES

SCALE
N.T.S.
@A1

DATE
11/12/2022

DRAWING NUMBER
P21161-4309-04-CD-BR-0001

REVISION
0



PLAN
SC. 1/500

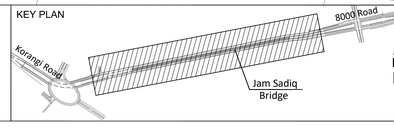
FOR TENDER
DECEMBER 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT HIGHWAY, ELECTRICAL & ENVIRONMENTAL DRAWINGS.
2. ALL DIMENSIONS ARE GIVEN IN MILLIMETER UNLESS SPECIFIED OTHERWISE.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO. BR-0001.
4. THE RETAINING WALLS LIMITS SHALL BE SPECIFIED BASED ON THE ACCURATE TOPOGRAPHIC SURVEY

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	11/12/22	APPROVED ISSUE	I.Y.	S.E.A.M.	Y.M.	E.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
GENERAL ARRANGEMENT AND DETAILS
(SHEET 1 OF 9)

SCALE
1:500@A1
@A1

DATE
11/12/2022

DRAWING NUMBER
P21161-4309-04-CD-BR-1001

REVISION
0

ELEVATION 1–1 AT DECK "A"

SC. 1/500

FOR TENDER
DECEMBER 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN

NOTES & LEGEND
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2. ALL DIMENSIONS ARE GIVEN IN MILLIMETER UNLESS SPECIFIED OTHERWISE.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO. BR-0001.
4. THE RETAINING WALLS LIMITS SHALL BE SPECIFIED BASED ON THE ACCURATE TOPOGRAPHIC SURVEY
5. LEVELS SHOWN ON TOP OF WEARING COURSE AT PGL.

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	11/12/22	APPROVED ISSUE	I.Y.	S.E./A.M.	Y.M.	E.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
GENERAL ARRANGEMENT AND DETAILS
(SHEET 2 OF 9)

SCALE
1:500@A1
@A1

DATE
11/12/2022

DRAWING NUMBER
P21161-4309-04-CD-BR-2001

REVISION
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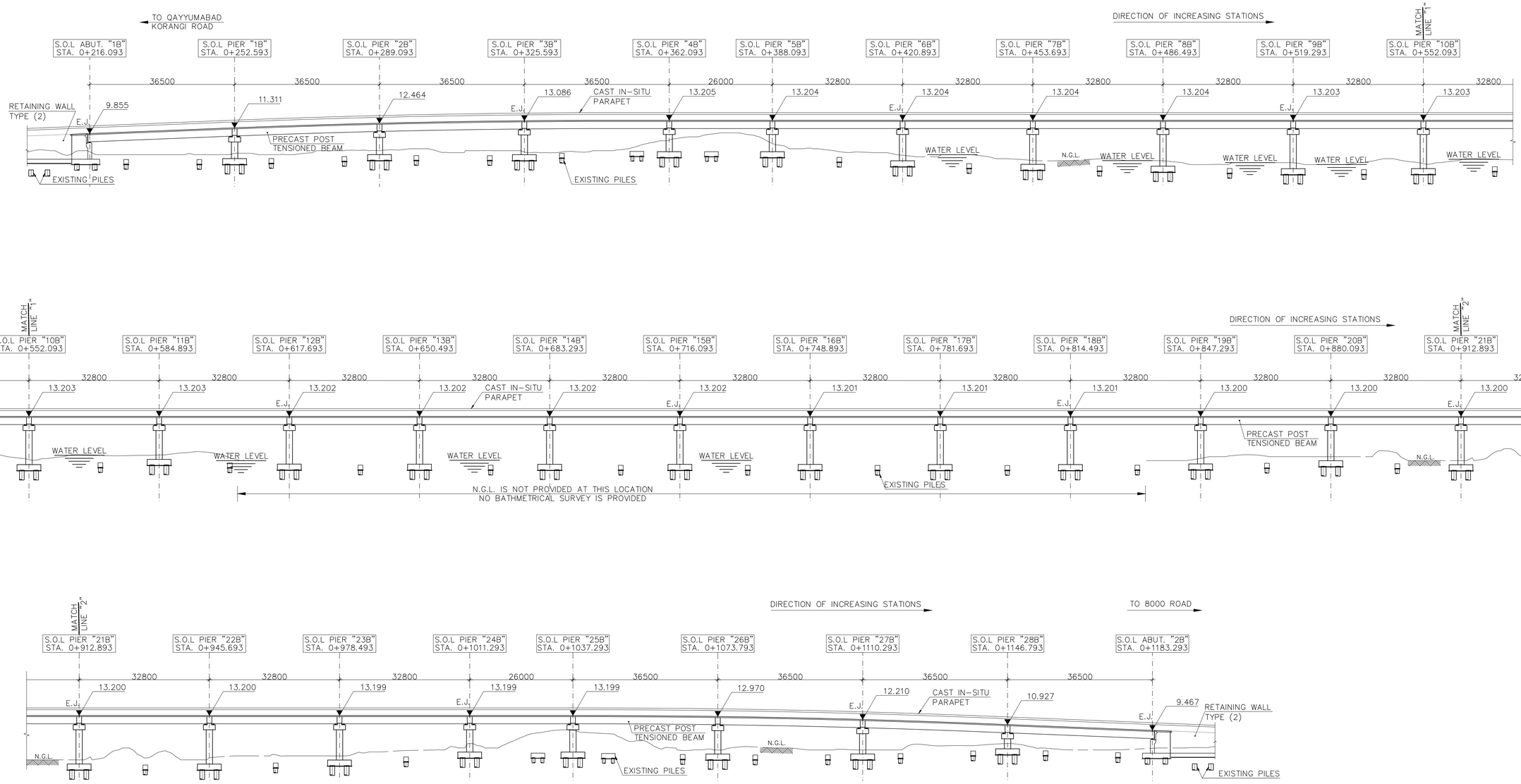


ELEVATION 2–2 AT DECK "B"

SC. 1/500

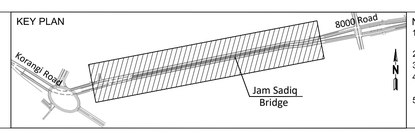
FOR TENDER
DECEMBER 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
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2. ALL DIMENSIONS ARE GIVEN IN MILLIMETER UNLESS SPECIFIED OTHERWISE.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO. BR-0001.
4. THE RETAINING WALLS LIMITS SHALL BE SPECIFIED BASED ON THE ACCURATE TOPOGRAPHIC SURVEY
5. LEVELS SHOWN ON TOP OF WEARING COURSE AT PGL.

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
				S.E./A.M.	Y.M.	E.A.
0	11/12/22	APPROVED ISSUE	I.Y.			

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
GENERAL ARRANGEMENT AND DETAILS
(SHEET 3 OF 9)

SCALE
1:500@A1
@A1

DATE
11/12/2022

DRAWING NUMBER
P21161-4309-04-CD-BR-2002

REVISION
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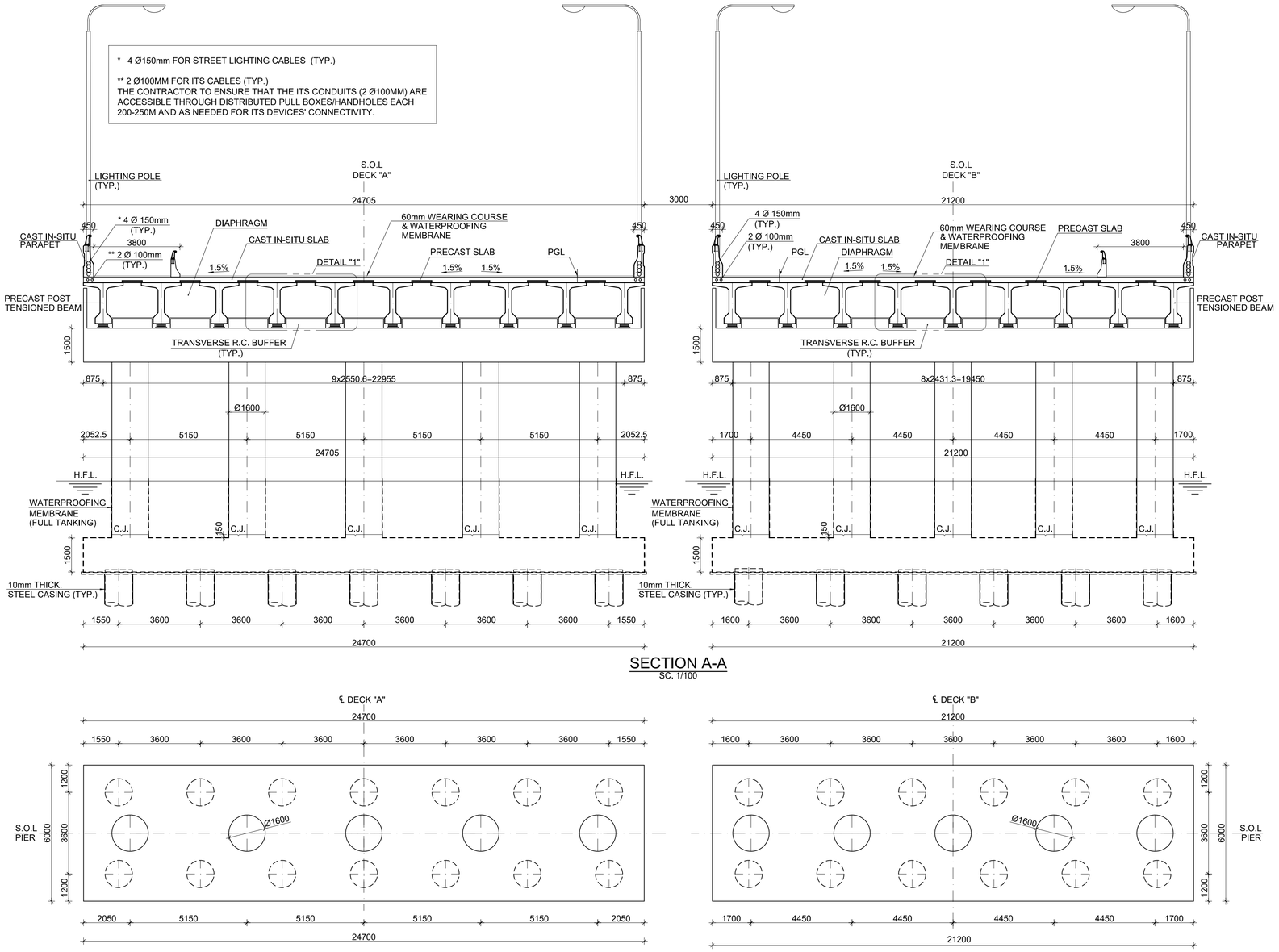


SECTION A-A

SC. 1/100

PILE CAP PLAN AT PIERS

SC. 1/100

FROM PIER "1" TO PIER "5" & PIER "10" FOR DECK "A"
FROM PIER "1" TO PIER "5" FOR DECK "B"

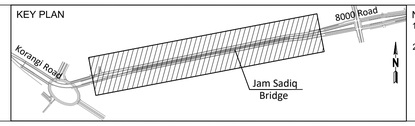
FOR TENDER
DECEMBER 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWGS. NO. BR-1001 & BR-2001.
2. ALL DIMENSIONS ARE GIVEN IN MILLIMETER UNLESS SPECIFIED OTHERWISE.

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	11/12/22	APPROVED ISSUE	I.Y.	S.E./A.M.	Y.M.	E.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

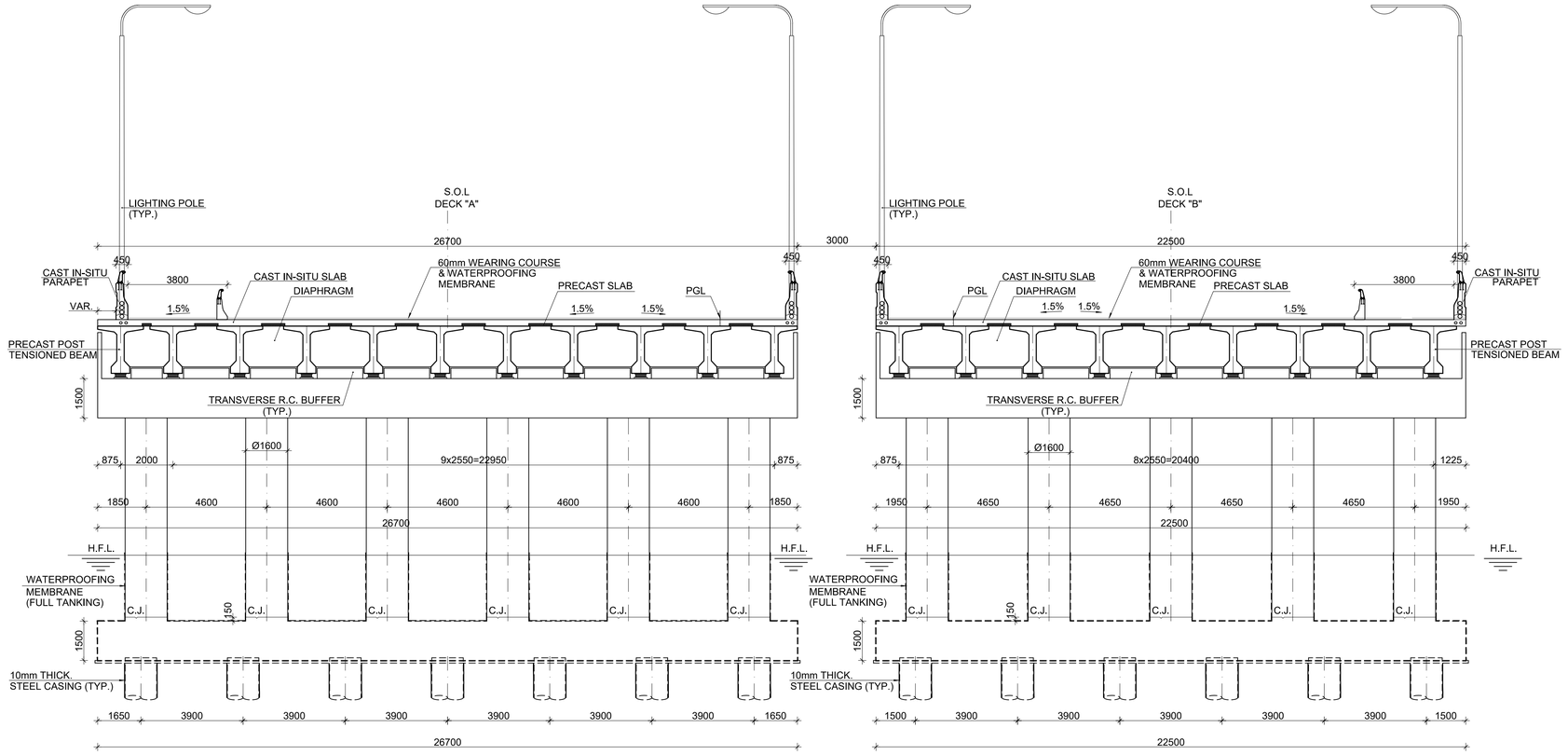
DRAWING TITLE
GENERAL ARRANGEMENT AND DETAILS (SHEET 4 OF 9)

SCALE: AS SHOWN @A1

DATE: 11/12/2022

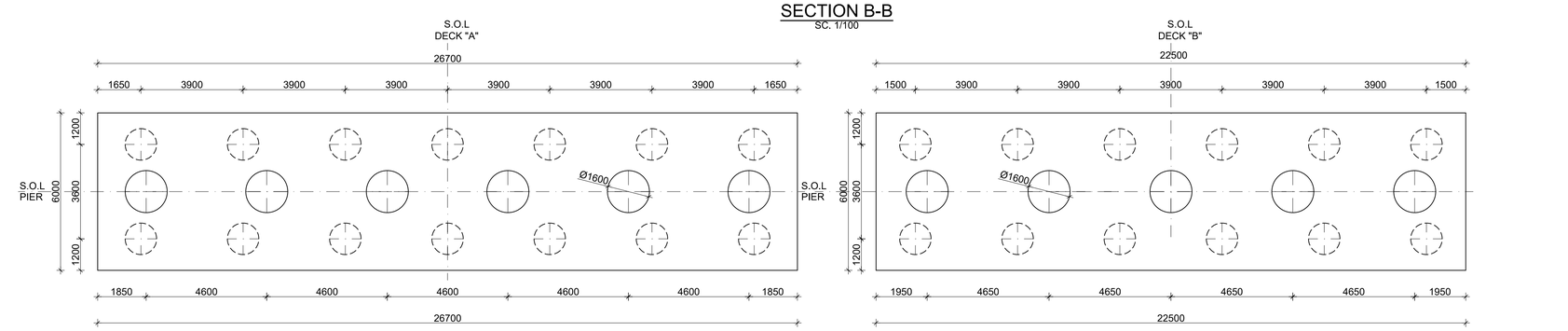
DRAWING NUMBER: P21161-4309-04-CD-BR-3001

REVISION: 0



SECTION B-B

SC. 1/100



PILE CAP PLAN AT PIERS

SC. 1/100

FROM PIER "6" TO PIER "9" FOR DECK "A"
FROM PIER "6" TO PIER "28" FOR DECK "B"

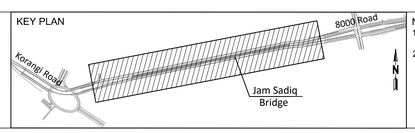
FOR TENDER
DECEMBER 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
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2. ALL DIMENSIONS ARE GIVEN IN MILLIMETER UNLESS SPECIFIED OTHERWISE.

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
				S.E./A.M.	Y.M.	E.A.
0	11/12/22	APPROVED ISSUE	I.Y.			

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
GENERAL ARRANGEMENT AND DETAILS
(SHEET 5 OF 9)

SCALE
AS SHOWN
@A1

DATE
11/12/2022

DRAWING NUMBER
P21161-4309-04-CD-BR-3002

REVISION
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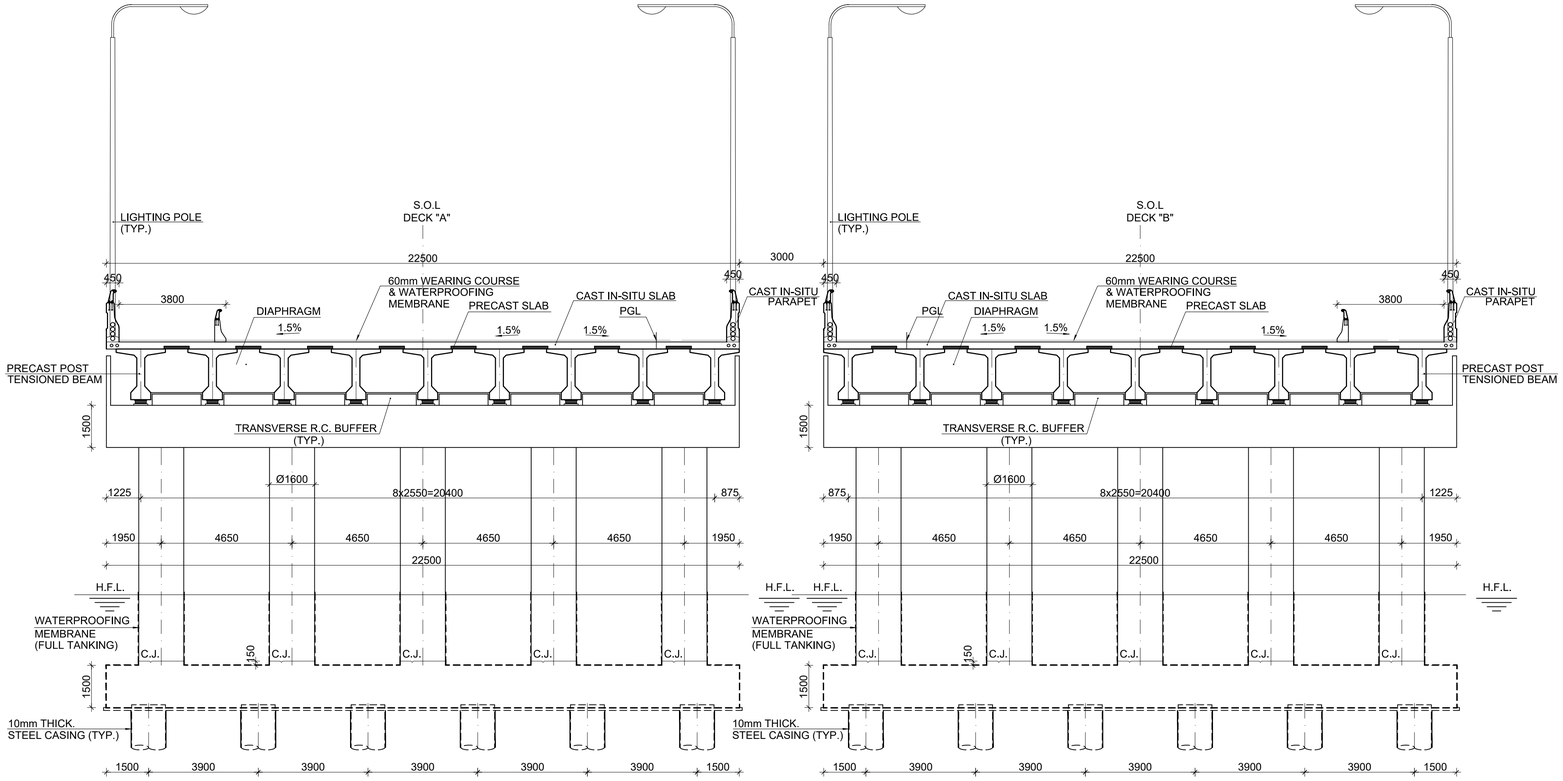
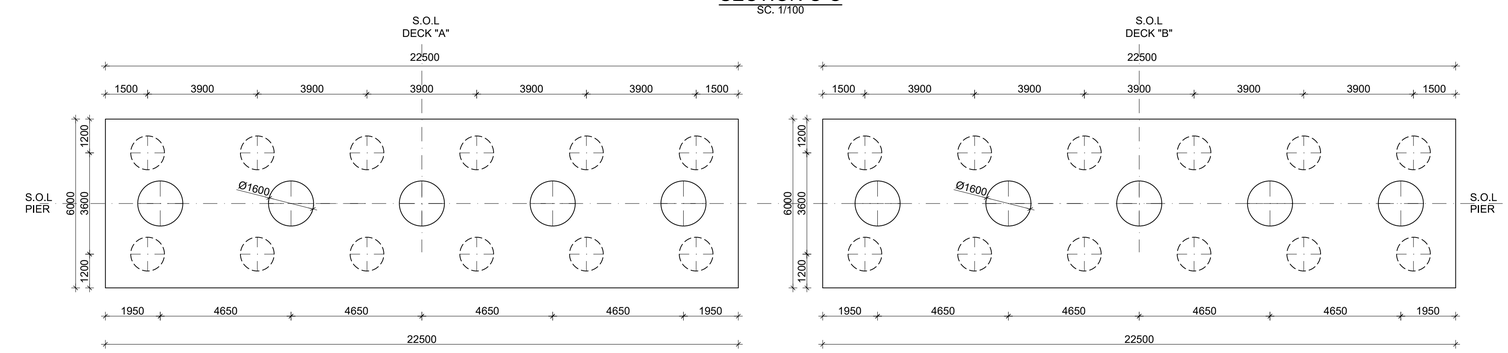


SECTION C-C

SC. 1/100



PILE CAP PLAN AT PIERS

SC. 1/100

FROM PIER "11" TO PIER "28" FOR DECK "A"
FROM PIER "6" TO PIER "28" FOR DECK "B"

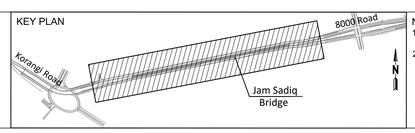
FOR TENDER
DECEMBER 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
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REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	11/12/22	APPROVED ISSUE	I.Y.	S.E./A.M.	Y.M.	E.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

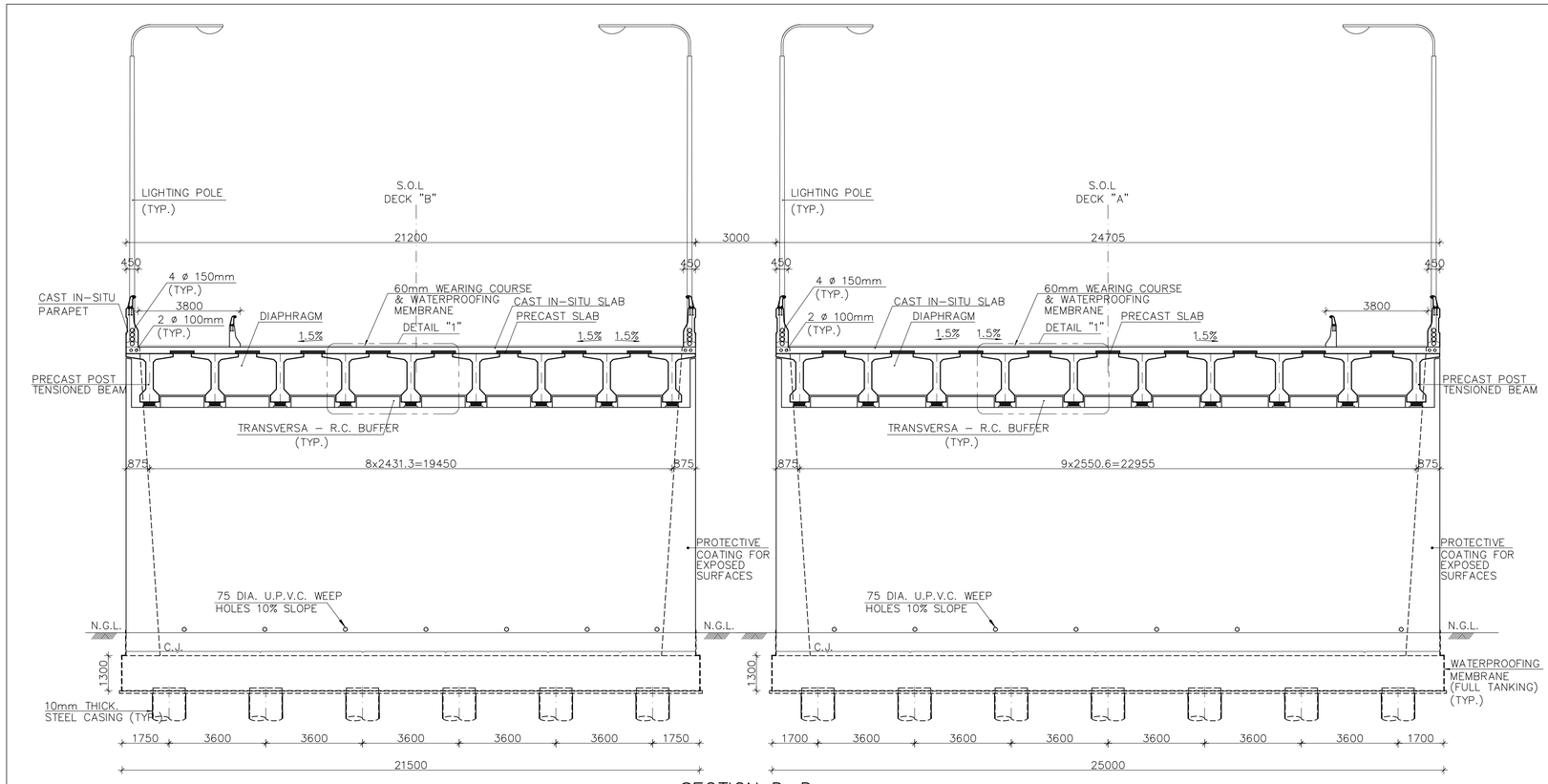
DRAWING TITLE
GENERAL ARRANGEMENT AND DETAILS (SHEET 6 OF 9)

SCALE: AS SHOWN @A1

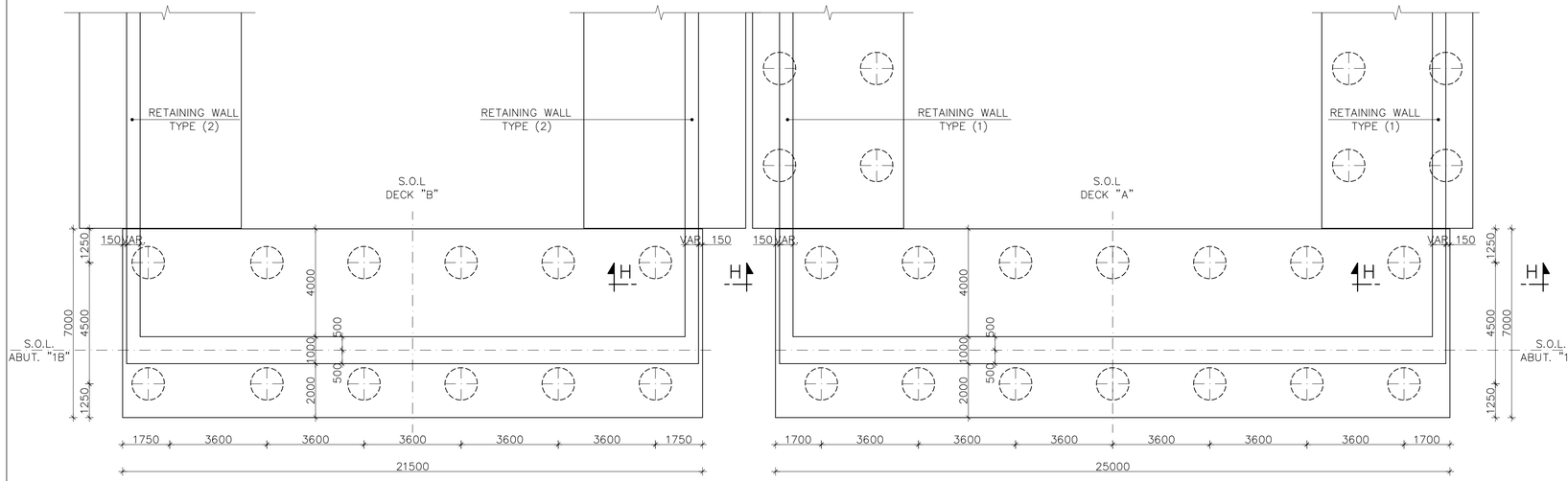
DATE: 11/12/2022

DRAWING NUMBER: P21161-4309-04-CD-BR-3003

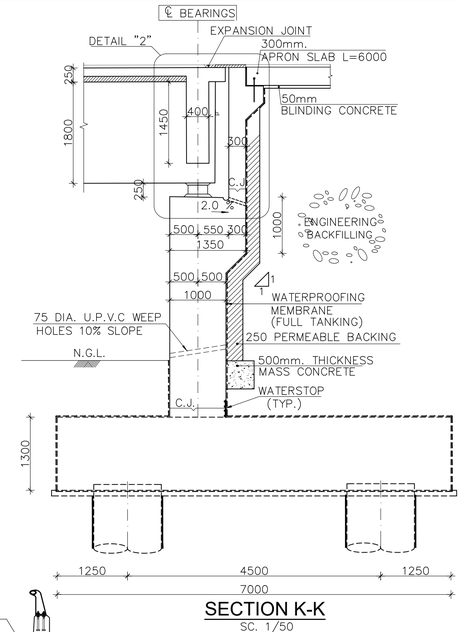
REVISION: 0



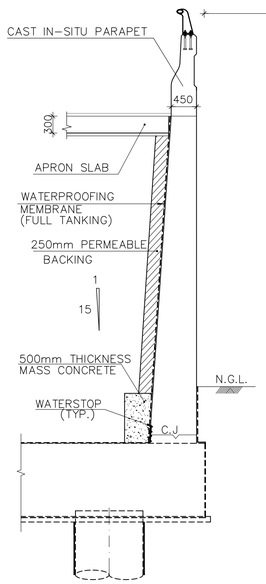
SECTION D-D
SC. 1/100



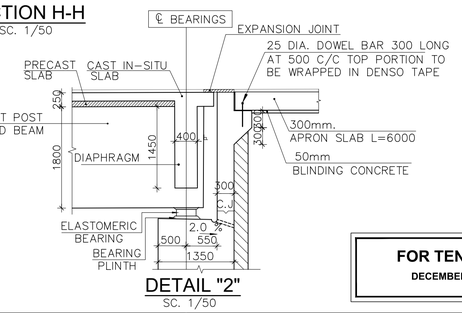
PILE CAP PLAN AT ABUTMENT "1"
SC. 1/100



SECTION K-K
SC. 1/50



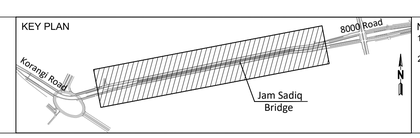
SECTION H-H
SC. 1/50



DETAIL "2"
SC. 1/50

FOR TENDER
DECEMBER 2022

KEY PLAN



NOTES & LEGEND
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REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	11/12/22	APPROVED ISSUE	I.Y.	S.E./A.M.	Y.M.	E.A.

CLIENT: SINDH MASS TRANSIT AUTHORITY, TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY: THE WORLD BANK

CONSULTANT: dar, NESPAK

PROJECT TITLE: KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

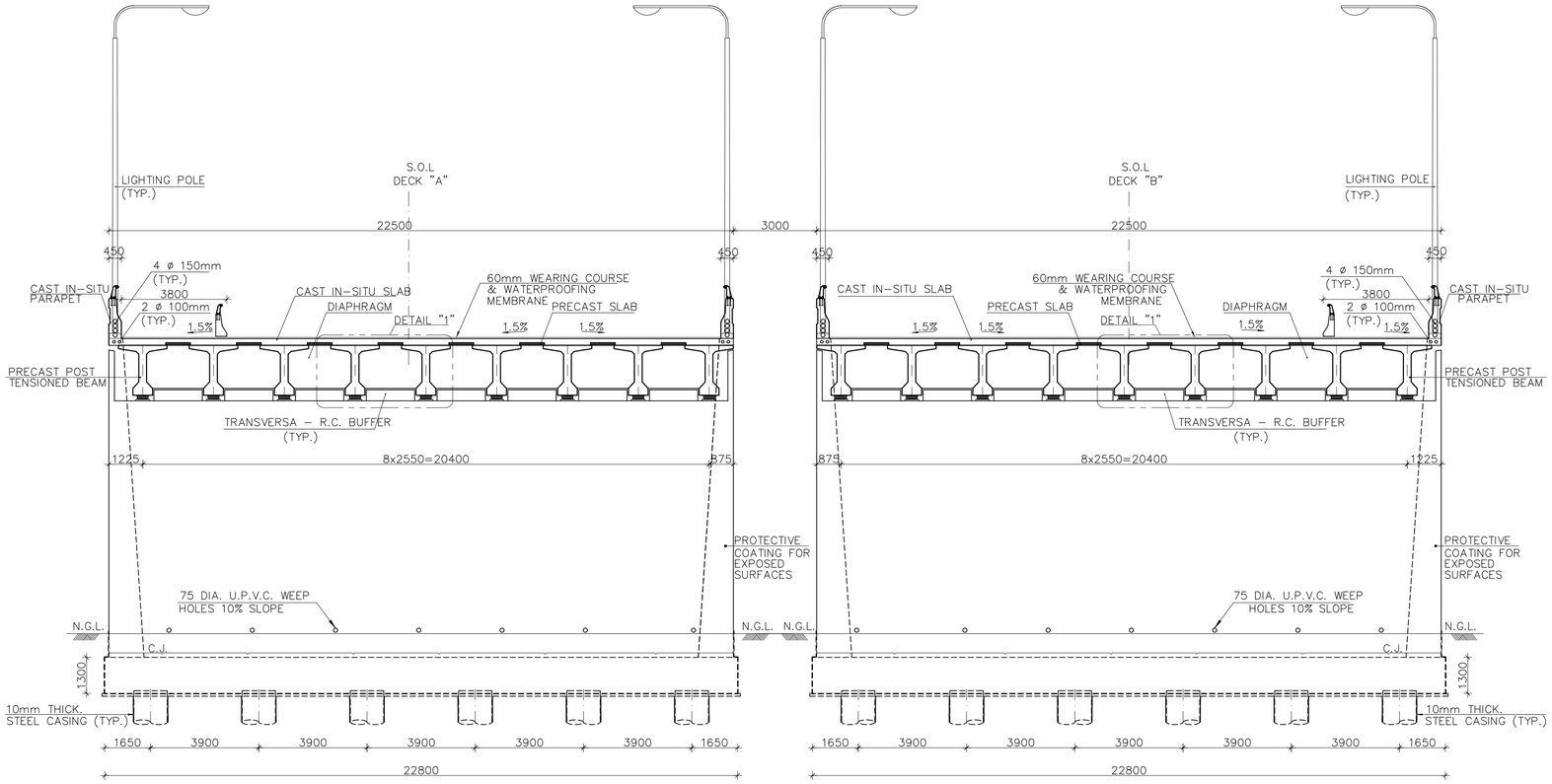
DRAWING TITLE: GENERAL ARRANGEMENT AND DETAILS (SHEET 7 OF 9)

SCALE: AS SHOWN @A1

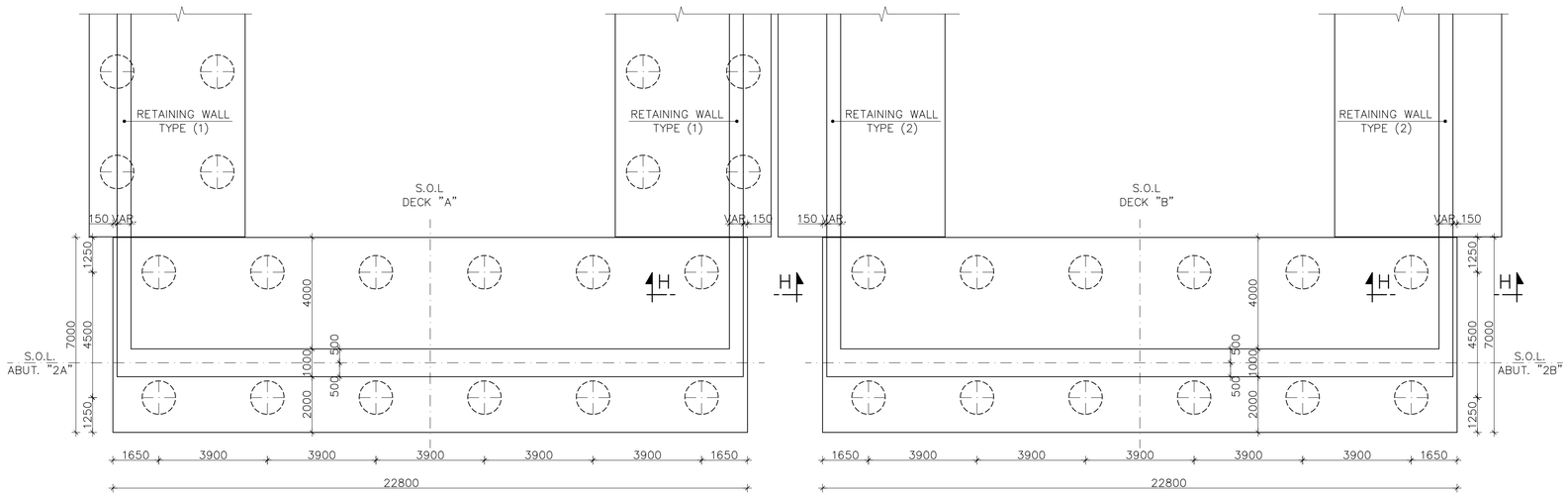
DATE: 11/12/2022

DRAWING NUMBER: P21161-4309-04-CD-BR-3004

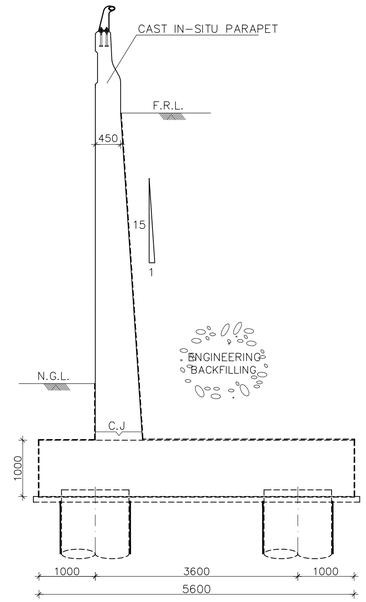
REVISION: 0



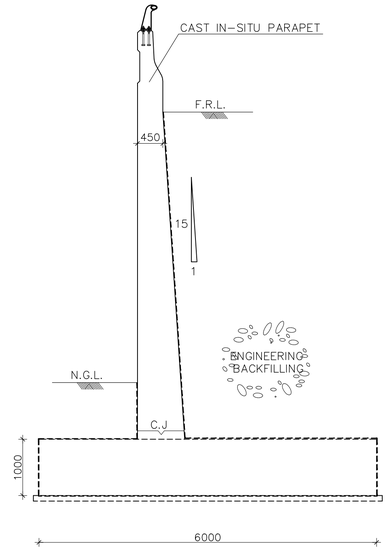
SECTION E-E
SC. 1/100



PILE CAP PLAN AT ABUTMENT "2"
SC. 1/100



RETAINING WALL (TYPE 1)
SC. 1/50



RETAINING WALL (TYPE 2)
SC. 1/50

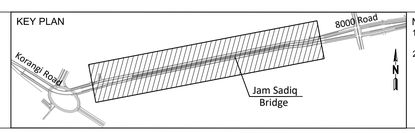
FOR TENDER
DECEMBER 2022

CLIENT: SINDH MASS TRANSIT AUTHORITY, TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY: THE WORLD BANK

CONSULTANT: dar, NESPAK

KEY PLAN



NOTES & LEGEND
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2. ALL DIMENSIONS ARE GIVEN IN MILLIMETER UNLESS SPECIFIED OTHERWISE.

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	11/12/22	APPROVED ISSUE	I.Y.	S.E./A.M.	Y.M.	E.A.

PROJECT TITLE: KARACHI MOBILITY PROJECT - YELLOW BRT LINE PACKAGE 4 - JAM SADIQ BRIDGE (SEGMENT 3)

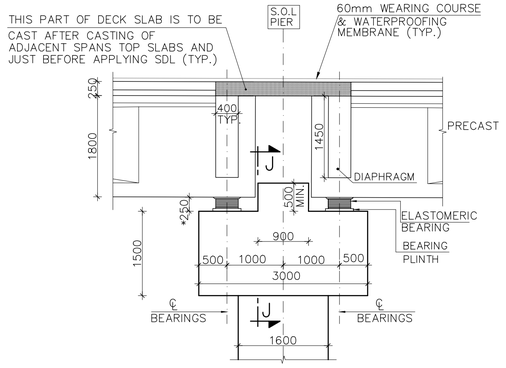
DRAWING TITLE: GENERAL ARRANGEMENT AND DETAILS (SHEET 8 OF 9)

SCALE: AS SHOWN @A1

DATE: 11/12/2022

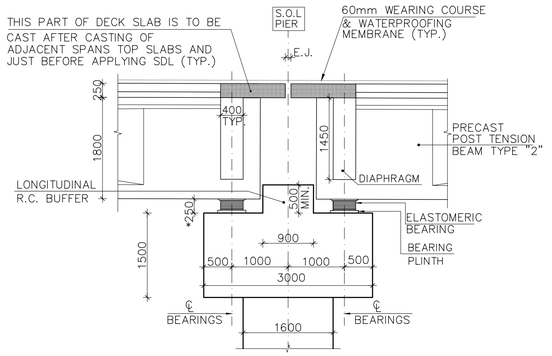
DRAWING NUMBER: P21161-4309-04-CD-BR-3005

REVISION: 0



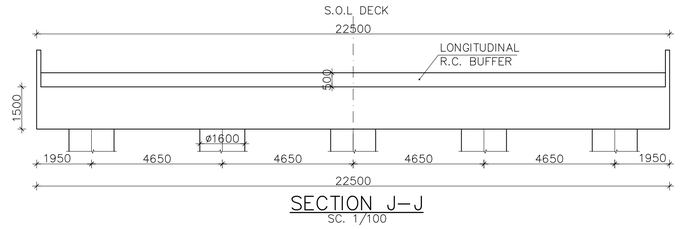
SECTION F–F
SC. 1/100

*MEASURED AT PIER CENTER LINE

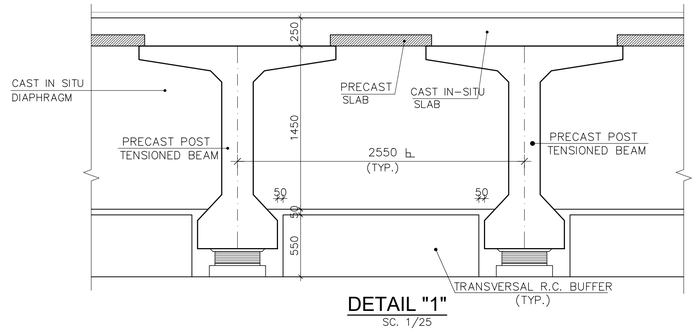


SECTION G–G
SC. 1/100

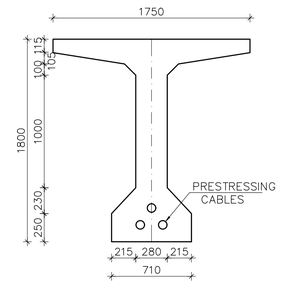
*MEASURED AT PIER CENTER LINE



SECTION J–J
SC. 1/100



DETAIL "1"
SC. 1/25



PRECAST POST TENSION BEAM
SC. 1/25

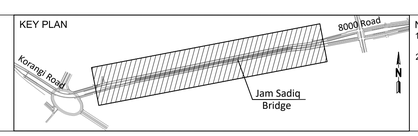
FOR TENDER
DECEMBER 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT,
GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWGS. NO. BR-1001 & BR-2001.
2. ALL DIMENSIONS ARE GIVEN IN MILLIMETER UNLESS SPECIFIED OTHERWISE.

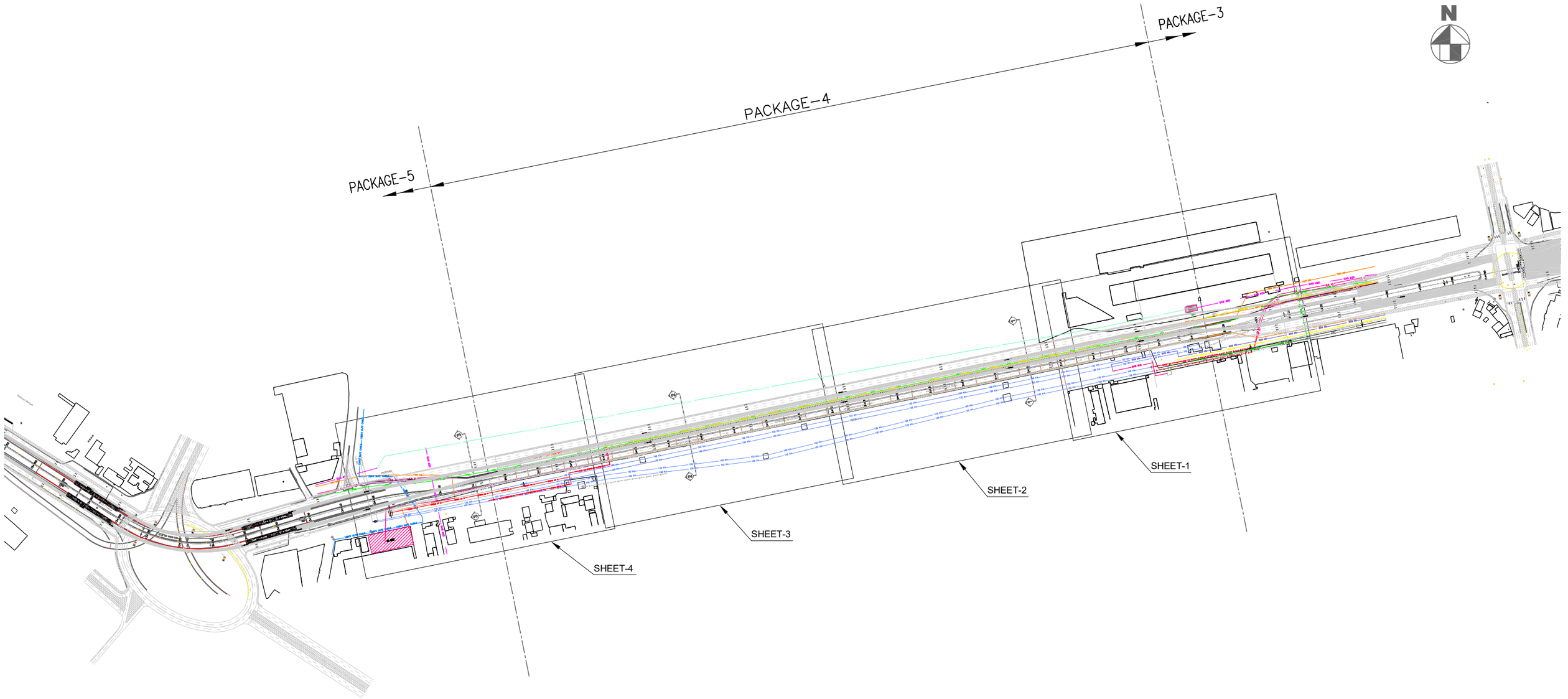
REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	11/12/22	APPROVED ISSUE	I.Y.	S.E./A.M.	Y.M.	E.A.

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
GENERAL ARRANGEMENT AND DETAILS
(SHEET 9 OF 9)

SCALE
AS SHOWN
@A1

DATE	DRAWING NUMBER	REVISION
11/12/2022	P21161-4309-04-CD-BR-3006	0



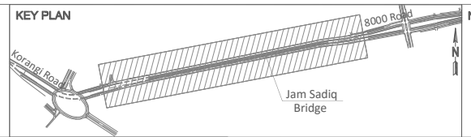
FOR TENDER
December 2022

			M.N	M.S	M.A	R.Z
0	12/12/22	APPROVED ISSUE	M.N	M.S	M.A	R.Z
REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN


NOTES & LEGEND
1- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2- HORIZONTAL DATUM IS REFERENCED TO WGS 84 (UTM), ZONE 42N
3- FOR TYPICAL ROAD CROSS SECTION, REFER DWG NO. P21161/4309-04-CD-UD-3001 - 3003

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
KEY PLAN FOR EXISTING UTILITIES

SCALE
N.T.S

DATE	DRAWING NUMBER	REVISION
12/12/2022	P21161/4309-04-CD-WE-UD-1100	0

L.O.W PACKAGE-4 PACKAGE-3

N

DMS SSGC

SSGC CHAMBER

GAS Ø 24

GAS ø20

11KV UG

EXWø12in

PTCL

MULTINET OPTICAL FIBER

BRT LANE

12+350 12+300 12+250 12+200 12+150 12+100 12+050 12+000

132 KV

GAS ø8

GAS ø12

GAS ø4

GAS ø16

EXISTING WATER 12"ø
EXISTING WATER 8"ø

EXISTING SSGC 24"ø
EXISTING PTCL
11KV UG CABLE
EXISTING SSGC 8"ø
EXISTING SSGC 4"ø
EXISTING SSGC 16"ø
OPTICAL FIBER

LEGEND:

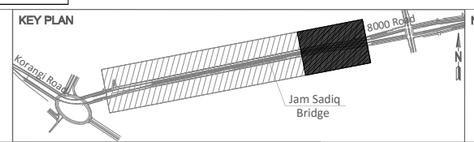
PTCL	PTCL
11KV ELECTRICAL LINE	11 KV
11KV UG CABLE	11 KV UG
132 KV CABLE	132 KV CABLE
ø8" EXISTING WATER LINE	EXWø8In
ø12" EXISTING WATER LINE	EXWø12In
LIMIT OF WORK	
HT POLE	
NTC	NTC
ø24" GAS LINE	GAS ø24
ø20" GAS LINE	GAS ø20
ø16" GAS LINE	GAS ø16
ø12" GAS LINE	GAS ø12
ø8" GAS LINE	GAS ø8
ø6" GAS LINE	GAS ø6
ø4" GAS LINE	GAS ø4
ø3/4" GAS LINE	GAS ø3/4

FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN


NOTES & LEGEND
1- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2- HORIZONTAL DATUM IS REFERENCED TO WGS 84 (UTM), ZONE 42N
3- FOR TYPICAL ROAD CROSS SECTION, REFER DWG NO. P21161/4309-04-CD-UD-3001 - 3003

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.N	M.S	M.A	R.Z

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

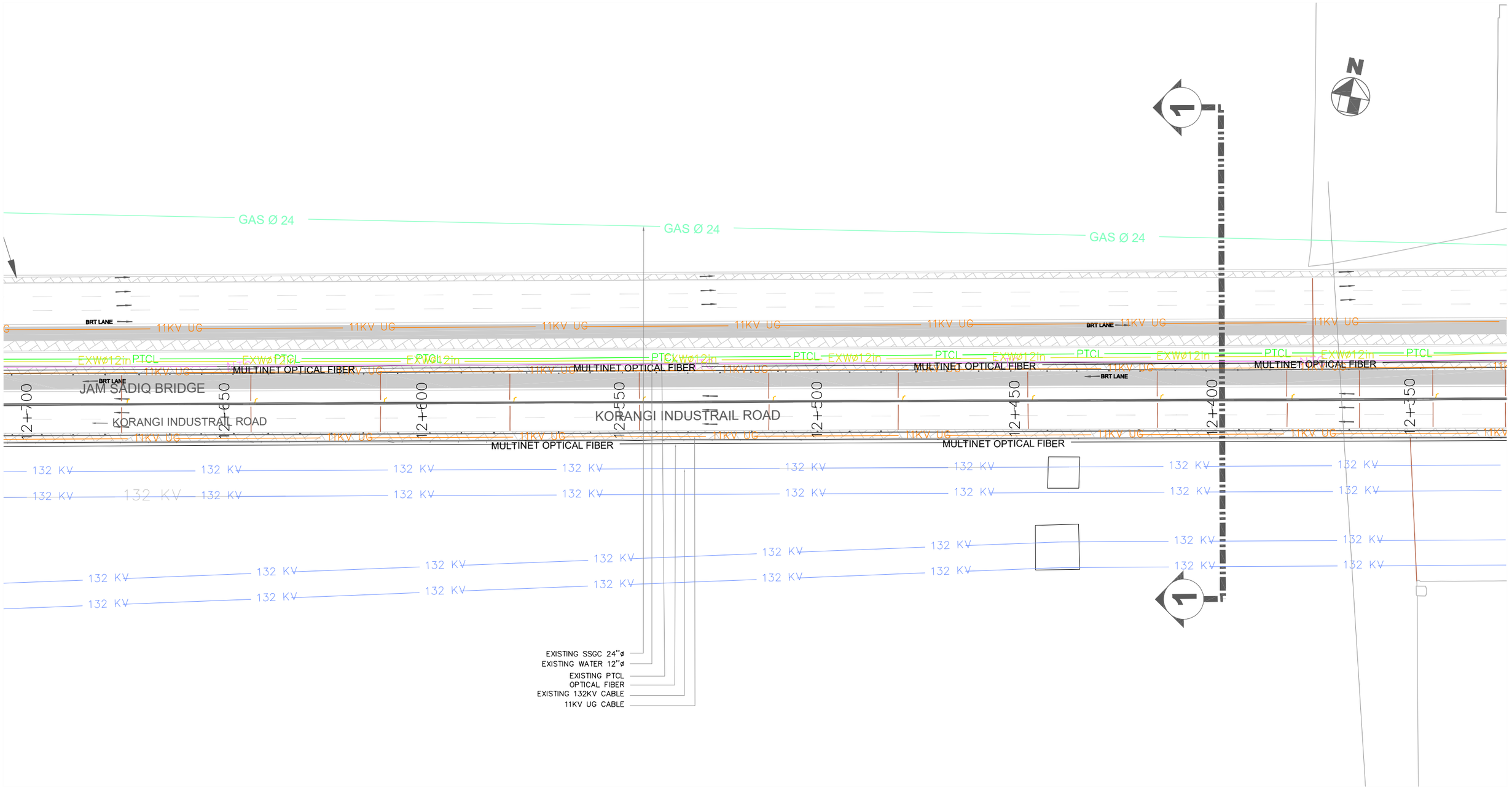
DRAWING TITLE
EXISTING UTILITIES LAYOUT PLAN (SHEET 1 OF 4)

SCALE: N.T.S

DATE: 12/12/2022

DRAWING NUMBER: P21161/4309-04-CD-WE-UD-1101

REVISION: 0



LEGEND:

PTCL	PTCL
11KV ELECTRICAL LINE	11 KV
11KV UG CABLE	11 KV UG
132 KV CABLE	132 KV CABLE
ø8" EXISTING WATER LINE	EXWø8In
ø12" EXISTING WATER LINE	EXWø12In
LIMIT OF WORK	
HT POLE	
NTC	NTC
ø24" GAS LINE	GAS ø24
ø20" GAS LINE	GAS ø20
ø16" GAS LINE	GAS ø16
ø12" GAS LINE	GAS ø12
ø8" GAS LINE	GAS ø8
ø6" GAS LINE	GAS ø6
ø4" GAS LINE	GAS ø4
ø3/4" GAS LINE	GAS ø3/4

FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
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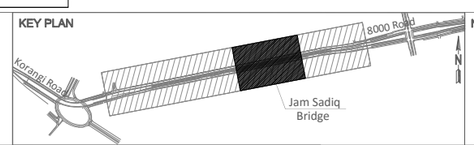
NESPAK

KEY PLAN


NOTES & LEGEND
1- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2- HORIZONTAL DATUM IS REFERENCED TO WGS 84 (UTM), ZONE 42N
3- FOR TYPICAL ROAD CROSS SECTION, REFER DWG NO. P21161/4309-04-CD-UD-3001 - 3003

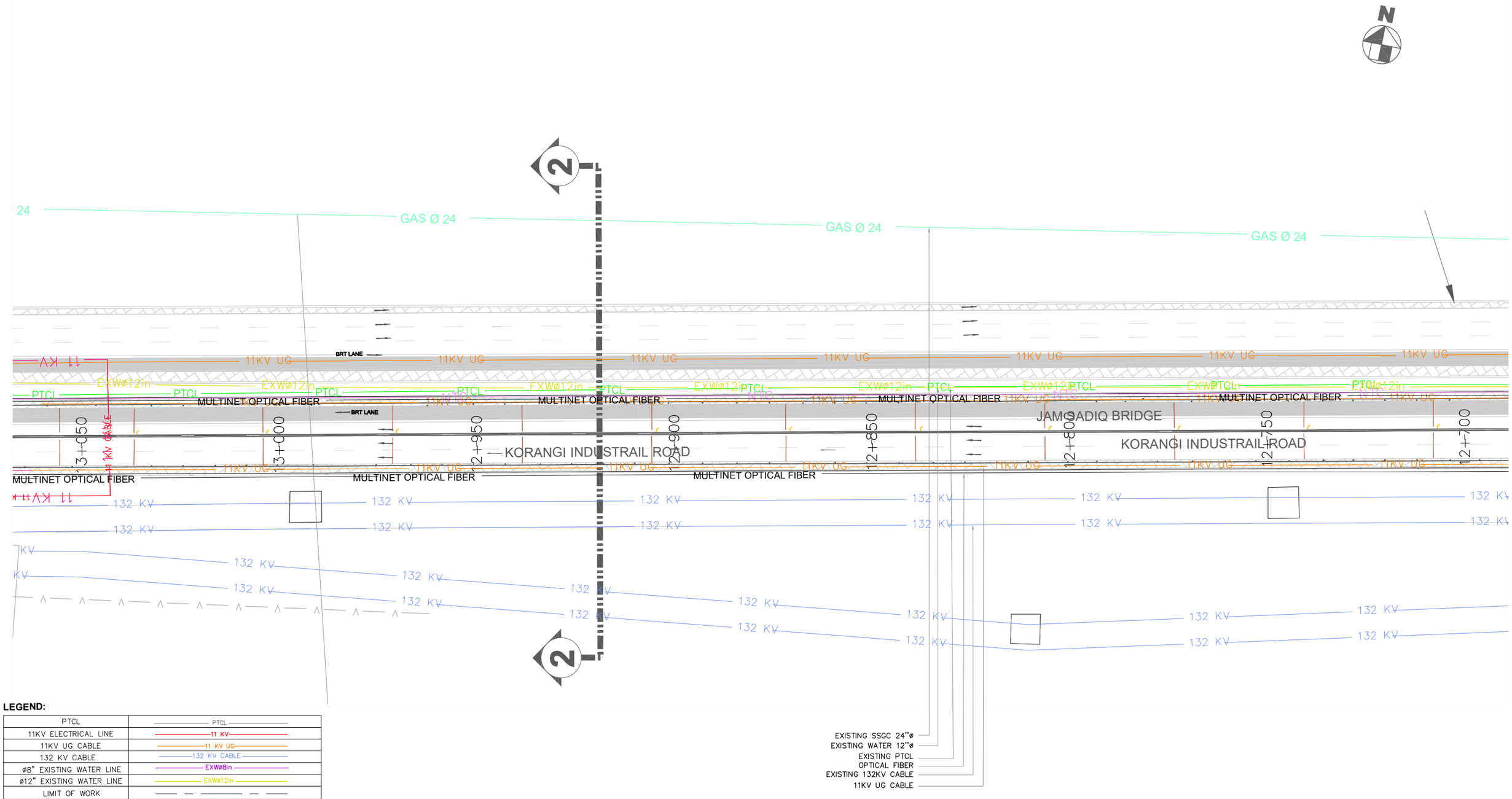
REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.N	M.S	M.A	R.Z

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

DRAWING TITLE
EXISTING UTILITIES LAYOUT PLAN
(SHEET 2 OF 4)

SCALE
N.T.S

DATE	DRAWING NUMBER	REVISION
12/12/2022	P21161/4309-04-CD-WE-UD-1102	0



LEGEND:

PTCL	PTCL
11KV ELECTRICAL LINE	11 KV
11KV UG CABLE	11 KV UG
132 KV CABLE	132 KV CABLE
ø8" EXISTING WATER LINE	EXWø8In
ø12" EXISTING WATER LINE	EXWø12In
LIMIT OF WORK	
HT POLE	
NTC	NTC
ø24" GAS LINE	GAS ø24
ø20" GAS LINE	GAS ø20
ø16" GAS LINE	GAS ø16
ø12" GAS LINE	GAS ø12
ø8" GAS LINE	GAS ø8
ø6" GAS LINE	GAS ø6
ø4" GAS LINE	GAS ø4
ø3/4" GAS LINE	GAS ø3/4

FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
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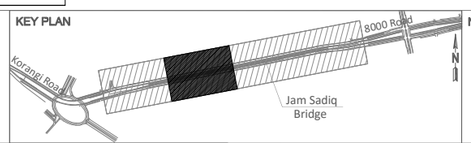
KEY PLAN



NOTES & LEGEND
1- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2- HORIZONTAL DATUM IS REFERENCED TO WGS 84 (UTM), ZONE 42N
3- FOR TYPICAL ROAD CROSS SECTION, REFER DWG NO. P21161/4309-04-CD-UD-3001 - 3003

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.N	M.S	M.A	R.Z

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

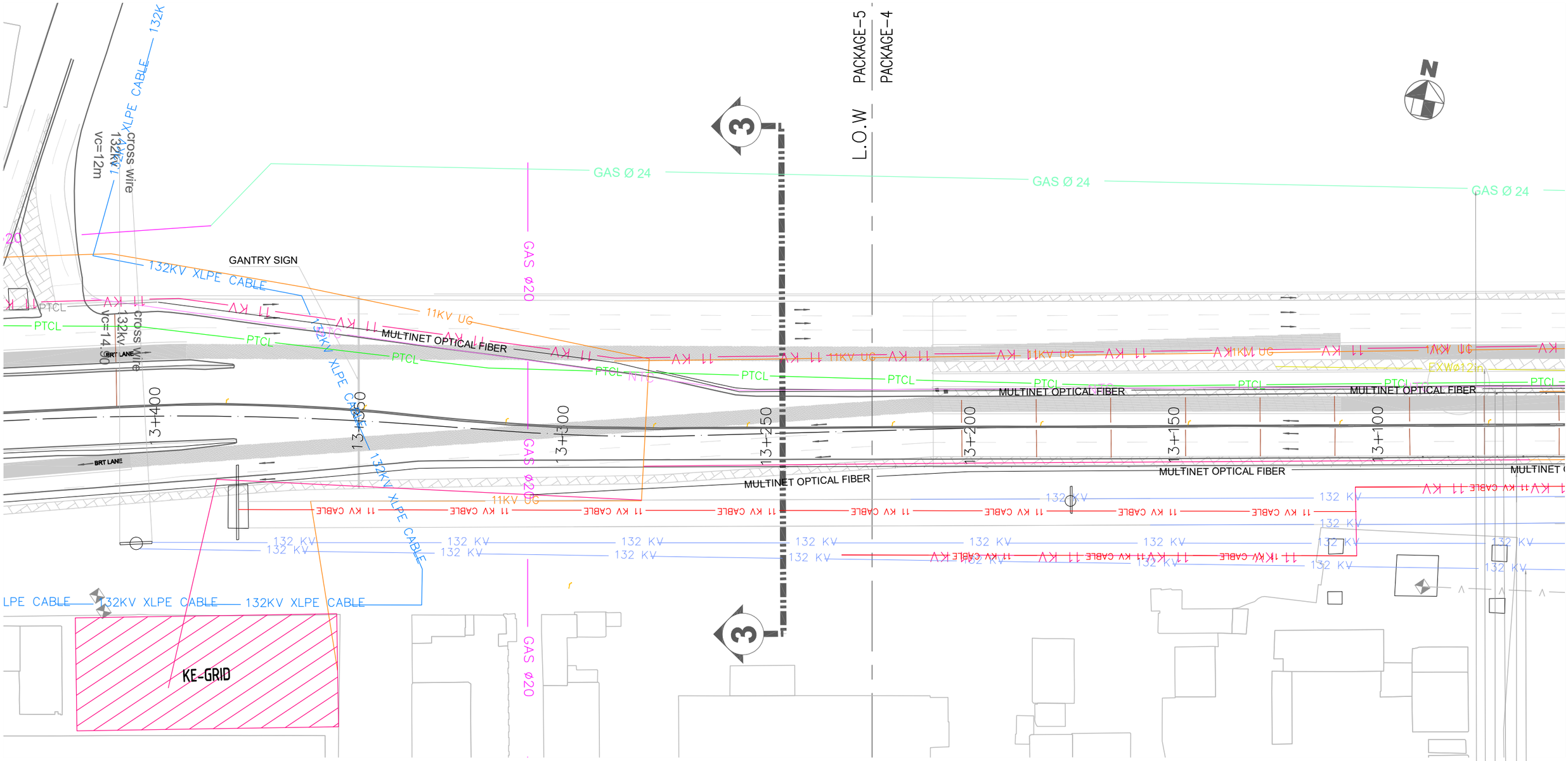
DRAWING TITLE
EXISTING UTILITIES LAYOUT PLAN
(SHEET 3 OF 4)

SCALE: N.T.S

DATE: 12/12/2022

DRAWING NUMBER: P21161/4309-04-CD-WE-UD-1103

REVISION: 0



LEGEND:

PTCL	PTCL
11KV ELECTRICAL LINE	11 KV
11KV UG CABLE	11 KV UG
132 KV CABLE	132 KV CABLE
ø8" EXISTING WATER LINE	EXWø8in
ø12" EXISTING WATER LINE	EXWø12in
LIMIT OF WORK	
HT POLE	
NTC	NTC
ø24" GAS LINE	GAS ø24
ø20" GAS LINE	GAS ø20
ø16" GAS LINE	GAS ø16
ø12" GAS LINE	GAS ø12
ø8" GAS LINE	GAS ø8
ø6" GAS LINE	GAS ø6
ø4" GAS LINE	GAS ø4
ø3/4" GAS LINE	GAS ø3/4

FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
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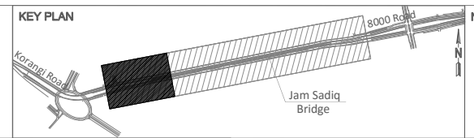
KEY PLAN


NOTES & LEGEND
1- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2- HORIZONTAL DATUM IS REFERENCED TO WGS 84 (UTM), ZONE 42N
3- FOR TYPICAL ROAD CROSS SECTION, REFER DWG NO. P21161/4309-04-CD-UD-3001 - 3003

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.N	M.S	M.A	R.Z

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

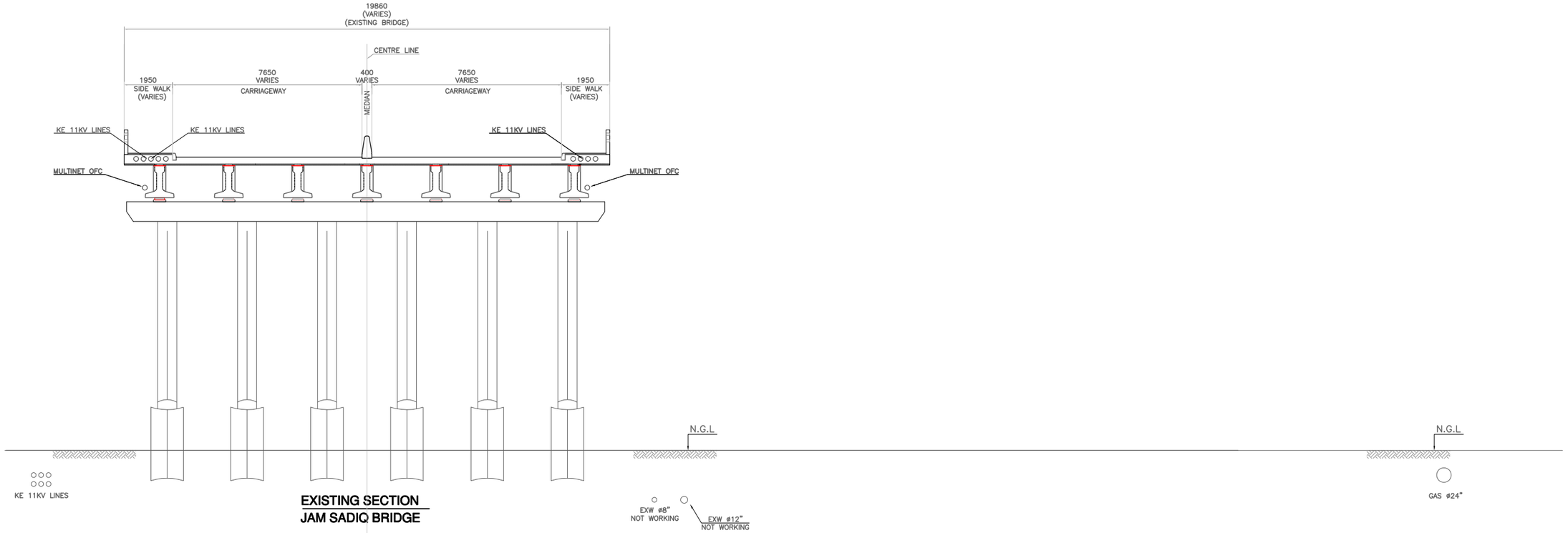
DRAWING TITLE
EXISTING UTILITIES LAYOUT PLAN (SHEET 4 OF 4)

SCALE: N.T.S

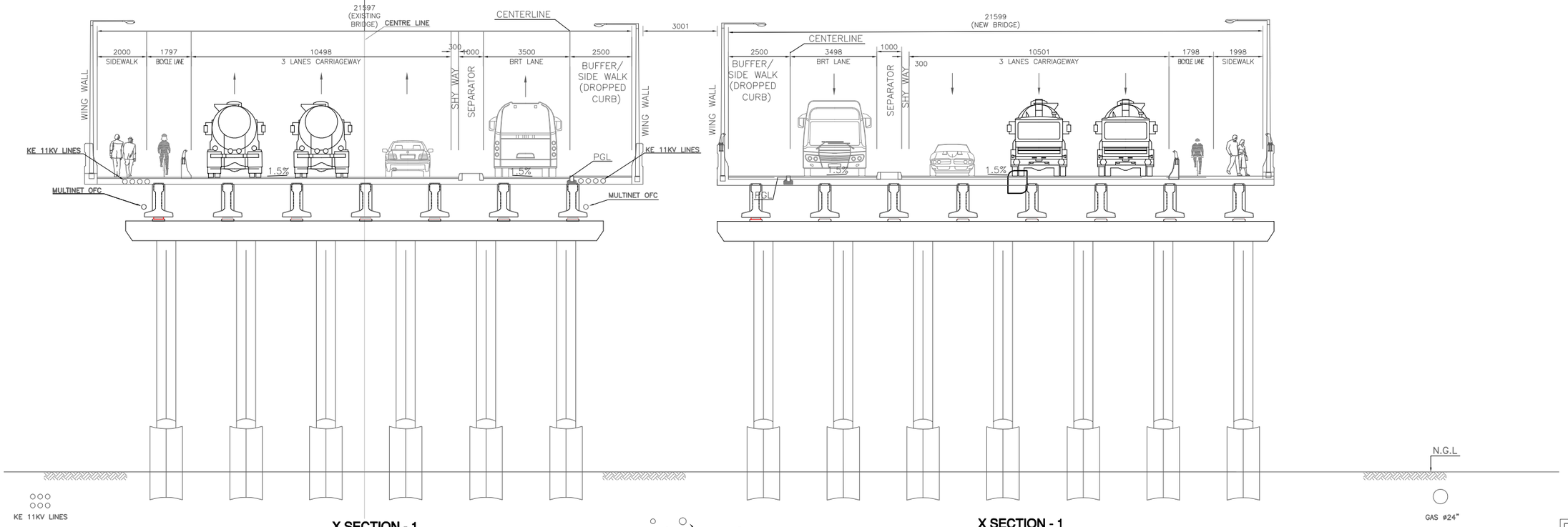
DATE: 12/12/2022

DRAWING NUMBER: P21161/4309-04-CD-WE-UD-1104

REVISION: 0



EXISTING SECTION
JAM SADIQ BRIDGE



X SECTION - 1
PROPOSED MODIFICATION FOR EXISTING
JAM SADIQ BRIDGE

X SECTION - 1
PROPOSED SECTION
JAM SADIQ BRIDGE

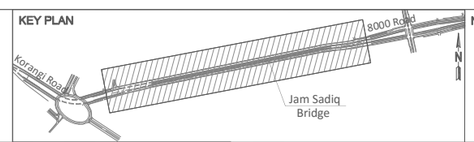
FOR TENDER
December 2022

CLIENT
SINDH MASS TRANSIT AUTHORITY
TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH

FUNDING AGENCY
THE WORLD BANK

CONSULTANT
dar
NESPAK

KEY PLAN



NOTES & LEGEND

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.N	M.S	M.A	R.Z

PROJECT TITLE
KARACHI MOBILITY PROJECT - YELLOW BRT LINE
PACKAGE 4 - JAM SADIQ BRIDGE
(SEGMENT 3)

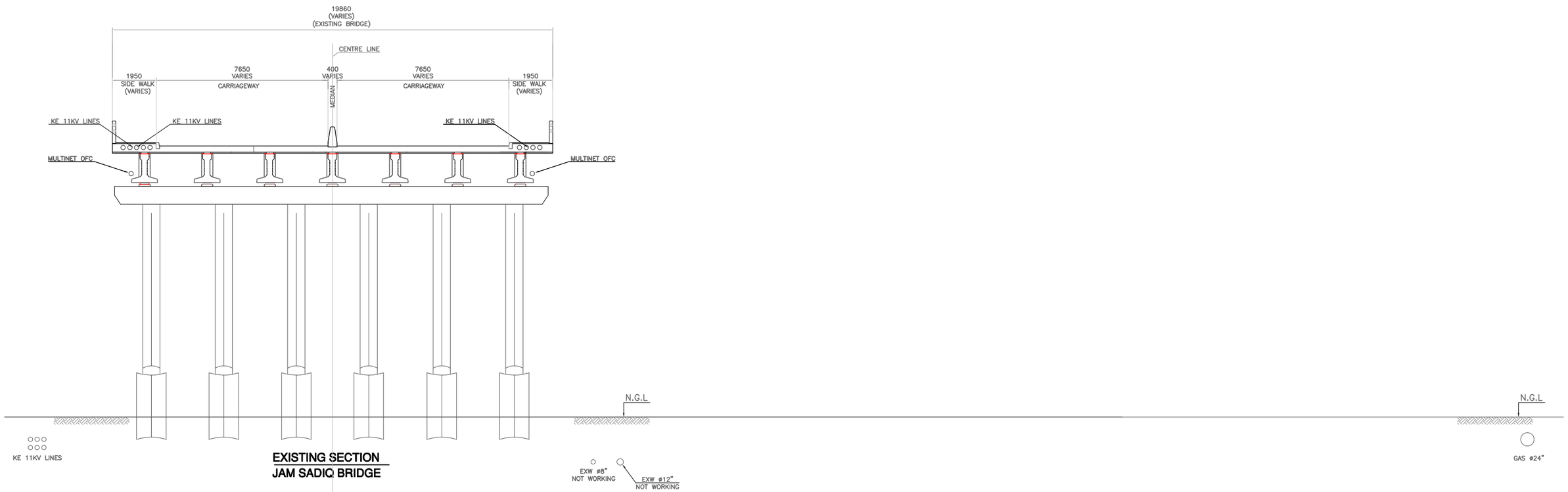
DRAWING TITLE
CROSS SECTION-1 FOR EXISTING UTILITIES

SCALE: N.T.S

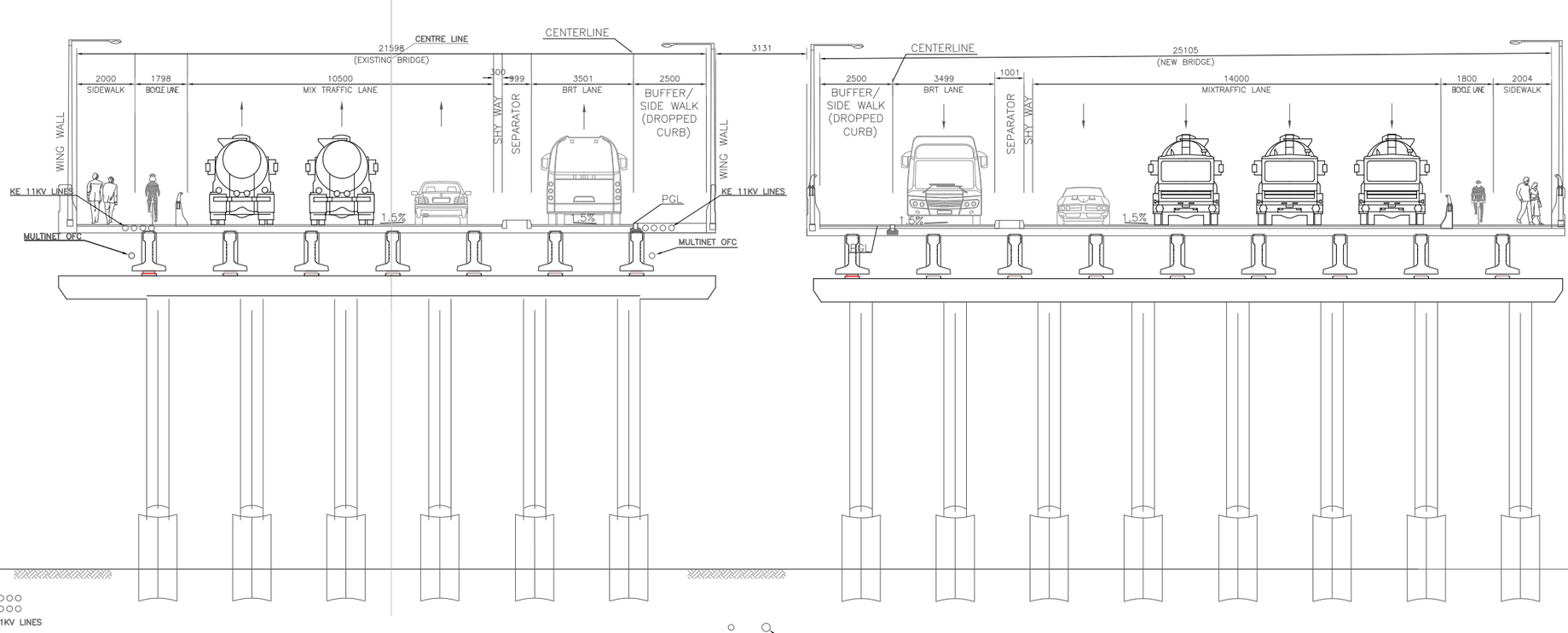
DATE: 12/12/2022

DRAWING NUMBER: P21161/4309-04-CD-WE-UD- 3001

REVISION: 0



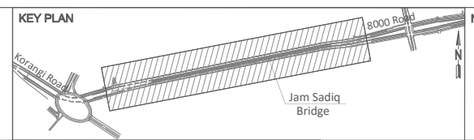
EXISTING SECTION
JAM SADIQ BRIDGE



X SECTION - 2
PROPOSED MODIFICATION FOR EXISTING
JAM SADIQ BRIDGE

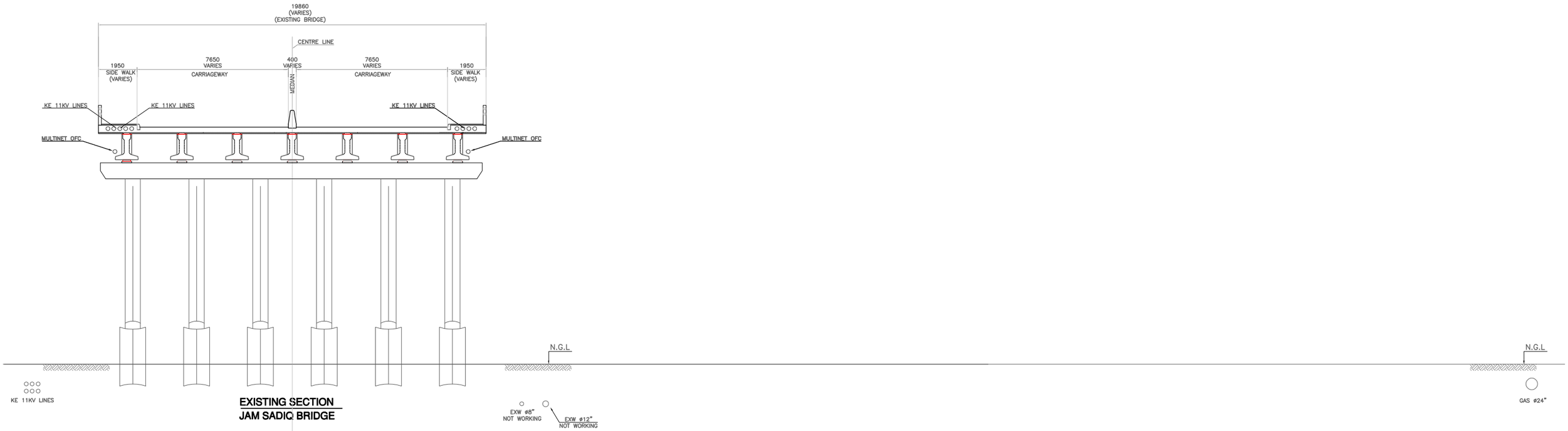
X SECTION - 2
PROPOSED SECTION
JAM SADIQ BRIDGE

FOR TENDER
December 2022

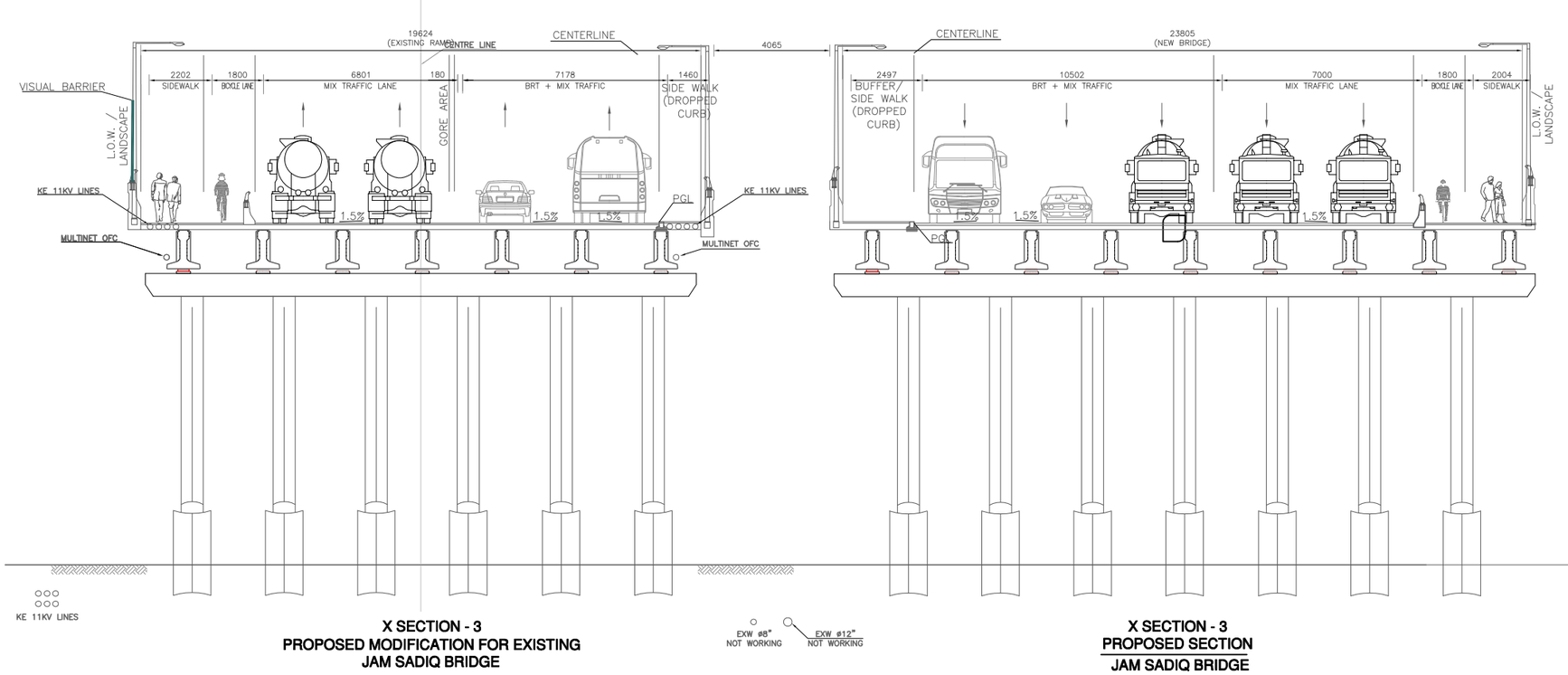
CLIENT	SINDH MASS TRANSIT AUTHORITY TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH
FUNDING AGENCY	THE WORLD BANK
CONSULTANT	dar NESPAK
KEY PLAN	
NOTES & LEGEND	

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.N	M.S	M.A	R.Z

PROJECT TITLE	KARACHI MOBILITY PROJECT - YELLOW BRT LINE PACKAGE 4 - JAM SADIQ BRIDGE (SEGMENT 3)
DRAWING TITLE	CROSS SECTION-2 FOR EXISTING UTILITIES
SCALE	N.T.S
DATE	12/12/2022
DRAWING NUMBER	P21161/4309-04-CD-WE-UD- 3002
REVISION	0



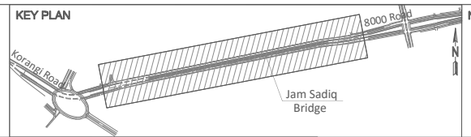
EXISTING SECTION
JAM SADIQ BRIDGE



X SECTION - 3
PROPOSED MODIFICATION FOR EXISTING
JAM SADIQ BRIDGE

X SECTION - 3
PROPOSED SECTION
JAM SADIQ BRIDGE

FOR TENDER
December 2022

CLIENT	SINDH MASS TRANSIT AUTHORITY TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH
FUNDING AGENCY	THE WORLD BANK
CONSULTANT	dar NESPAK
KEY PLAN	
NOTES & LEGEND	

REV.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED
0	12/12/22	APPROVED ISSUE	M.N	M.S	M.A	R.Z

PROJECT TITLE	KARACHI MOBILITY PROJECT - YELLOW BRT LINE PACKAGE 4 - JAM SADIQ BRIDGE (SEGMENT 3)
DRAWING TITLE	CROSS SECTION-3 FOR EXISTING UTILITIES
SCALE	N.T.S
DATE	12/12/2022
DRAWING NUMBER	P21161/4309-04-CD-WE-UD- 3003
REVISION	0